LEATHER.

LEATHER, TANNED, CURRIED, AND FINISHED.

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This report presents the statistics of the manufacture of leather, tanned, curried, and finished, at the census of 1900. In this classification are included leather, morocco; leather, patent and enameled; leather, tanned and curried; and leather, dressed skins, which were separately reported in 1890. In all the comparative tables these manufactures, so far as reported for each decade of the half century, are similarly combined under the same classification.

The statistics of the principal manufactures of leather from 1850 to 1900, inclusive, are given in a preliminary table, as they are of interest for comparative purposes. The differing classifications, from decade to decade, have been made uniform, so that the statistics representing the same kinds of manufactures are really comparable.

The leather manufactures may be taken as fairly representative of national progress and industrial development. At no time in the history of the United States have there been any really important imports of leather manufactures. The domestic production of leather and leather goods has continued from 1789 fairly to supply the home demand, and within the past two decades a considerable export movement has developed.

Table 1 is a comparative summary of the principal leather manufactures for the census years 1850 to 1900, inclusive. In the total value of the products of the group there is necessarily some duplication, because leather is valued as a product in a number of the manufactures, and as material also in some of the others. This duplication is probably no more than appears in groupings of some other manufactures, and does not affect the number of establishments, capital invested, wage-earners employed, and wages paid.

TABLE 1.—PRINCIPAL LEATHER MANUFACTURES: COMPARATIVE SUMMARY, 1850 TO 1900.

	Year.	Number of establishments.	Capital.	WAGE-EARNERS.		Cost of materials used.	Value of products.
				Average number.	Total wages.		
Total	1900	40,751	$356,581,888	251,920	$105,571,004	$405,208,784	$615,720,395
Boots and shoes, factory product	1900	1,600	101,795,233	142,922	59,175,883	169,004,054	261,028,580
Leather, tanned, curried, and finished[1]	1900	1,306	178,977,421	52,109	22,591,091	155,000,004	204,038,127
Saddlery and harness	1900	12,934	43,354,136	24,123	10,725,647	33,127,926	62,630,902
Leather goods, pocketbooks, trunks, and valises	1900	772	13,505,819	14,990	5,679,767	13,485,761	26,905,814
Boots and shoes, custom work and repairing	1900	23,560	9,262,134	9,698	4,128,361	8,288,664	26,550,678
Boot and shoe cut stock	1900	342	7,003,080	6,155	2,230,691	17,800,282	23,242,892
Belting and hose, leather	1900	105	7,410,219	1,667	913,937	7,500,413	10,623,177
Boot and shoe uppers	1900	132	273,796	256	125,627	401,680	700,225
Total	1890	33,970	265,687,684	233,496	107,978,195	307,376,267	529,311,269
Boots and shoes, factory product	1890	2,082	95,282,311	133,690	60,667,145	118,785,831	220,649,358
Leather, tanned, curried, and finished	1890	1,749	97,653,898	42,095	21,090,176	122,221,982	171,003,387
Saddlery and harness	1890	7,931	35,346,620	22,672	10,908,918	24,674,225	52,970,801
Leather goods, pocketbooks, trunks, and valises	1890	613	11,148,694	10,074	4,448,796	8,785,822	18,814,885
Boots and shoes, custom work and repairing	1890	20,803	14,230,081	16,981	7,422,377	10,403,383	34,856,651
Boot and shoe cut stock	1890	344	5,401,834	4,992	1,891,031	13,744,655	17,903,846
Belting and hose, leather	1890	93	4,973,420	1,342	780,615	6,132,704	8,633,634
Boot and shoe uppers	1890	317	1,216,026	1,358	609,324	1,902,926	3,346,002
Leather, dressed skins	1890	38	434,800	297	159,813	724,739	1,072,755
Total	1880	32,327	152,380,350	207,093	79,747,644	308,679,003	461,189,543
Boots and shoes, factory product	1880	1,959	42,994,028	111,152	48,001,438	102,442,442	166,050,354
Leather, tanned, curried, and finished	1880	5,426	67,117,674	94,887	14,062,456	145,320,852	184,865,633
Saddlery and harness	1880	7,999	16,508,019	21,446	7,997,752	19,968,716	38,081,643
Leather goods, pocketbooks, trunks, and valises	1880	378	3,961,256	6,998	2,737,726	5,951,039	11,068,749
Boots and shoes, custom work and repairing	1880	16,013	11,364,273	22,667	7,993,706	12,524,133	30,870,127
Boot and shoe cut stock	1880	172	1,210,300	2,885	735,482	5,939,249	7,531,635
Belting and hose, leather	1880	97	2,749,299	1,229	607,287	5,021,203	6,531,249
Boot and shoe uppers	1880	81	209,264	437	170,425	448,104	790,842
Leather, dressed skins	1880	202	6,266,237	5,395	2,441,372	11,063,265	15,399,311

[1] Includes leather, dressed skins.

TABLE 1.—PRINCIPAL LEATHER MANUFACTURES: COMPARATIVE SUMMARY, 1850 TO 1900—Continued.

	Year.	Number of establishments.	Capital.	WAGE-EARNERS		Cost of materials used.	Value of products.
				Average number.	Total wages.		
Total	1870	38,990	$128,812,105	199,826	$76,150,297	$235,341,371	$385,241,254
Leather, tanned, curried, and finished	1870	7,459	59,784,362	34,345	14,108,201	116,469,899	154,377,625
Saddlery and harness	1870	7,607	13,935,961	23,557	7,046,207	16,068,310	32,709,031
Leather goods, pocketbooks, trunks, and valises	1870	295	2,638,389	4,322	2,171,416	3,889,695	9,091,543
Boots and shoes	1870	23,428	48,994,366	135,889	51,972,712	93,582,528	181,644,099
Belting and hose, leather	1870	91	2,118,577	808	454,187	3,231,204	4,558,043
Leather, dressed skins	1870	110	1,340,450	898	397,674	2,099,735	2,859,972
Total	1860	21,556	70,718,431	165,086	44,308,830	102,084,492	187,552,628
Leather, tanned, curried, and finished	1860	5,175	38,908,170	26,145	8,144,278	49,534,318	75,318,475
Saddlery and harness	1860	3,621	6,478,184	12,285	4,150,365	6,606,415	14,169,037
Leather goods, pocketbooks, trunks, and valises	1860	214	1,244,000	3,160	901,741	1,990,573	4,163,956
Boots and shoes	1860	12,486	23,357,627	123,026	30,938,080	42,728,174	91,889,298
Boot and shoe cut stock	1860	1	25,000	15	8,184	31,400	149,740
Belting and hose, leather	1860	46	588,000	354	134,952	915,271	1,481,750
Leather, dressed skins	1860	13	117,450	101	31,230	278,341	380,272
Total	1850	21,679	40,232,503	145,988	31,877,342	55,873,881	109,734,643
Leather, tanned, curried, and finished	1850	6,664	22,582,795	25,379	6,492,130	26,038,743	42,932,628
Saddlery and harness	1850	3,515	3,969,379	12,958	3,154,008	4,427,006	9,935,474
Leather goods, pocketbooks, trunks, and valises	1850	165	522,610	2,142	543,840	1,056,835	2,213,563
Boots and shoes	1850	11,305	12,924,919	105,254	21,622,608	23,848,374	53,967,408
Belting and hose, leather	1850	8	40,800	39	15,208	111,785	160,500
Leather, dressed skins	1850	22	192,000	216	49,548	391,138	525,370

It appears from Table 1 that the total production of the leather manufactures named increased from $109,734,643 in 1850 to $615,720,395 in 1900, or about sixfold, while the population increased about three and one-quarter fold. With less than double the number of establishments the capital increased nearly ninefold, the number of wage-earners employed nearly doubled, and the wages paid increased more than threefold. The value of the product on a per capita basis of the total population was $4.73 in 1850; $5.96 in 1860; $10 ($8 gold basis) in 1870; $9.20 in 1880, when prices were high; $8.45 in 1890, and $8.07 in 1900, the decrease in the latter years being partly due to the lower cost of production. It may be stated also, in explanation, that the reports for leather production previous to 1890 embraced separate returns for leather, tanned, and for leather, curried. This, to a large extent, duplicated the value of the leather, tanned. In 1890 the leather, tanned and curried, was given in one item and hence the duplication not appearing, the value of the leather product for 1890 appeared to be less than for 1880, although it is well known that there was an increase of from 20 to 25 per cent.

It was not until the census of 1880 that the manufacture of boots and shoes, factory product, was reported separately from boots and shoes, custom work and repairing. Great improvements in factory methods have steadily reduced the cost of that product, so that, while people buy more shoes, the cost per pair is less. It may be noted also that, with the increase in the shoe-factory production, there has been a decrease in custom work and repairing. The latter, which was $30,870,127 in 1880, increased to $34,856,651 in 1890, and decreased to $26,550,678 in 1900.

The manufacture of boot and shoe cut stock might be considered almost as part of the factory manufacture of boots and shoes, but the increase in the value of this product from $7,531,635 in 1880 to $17,903,846 in 1890, and to $23,242,892 in 1900, proves that shoe manufacturers find it an advantage to buy the soles, heels, counters, etc., cut and assorted, rather than to do their own cutting from the sole-leather sides.

Table 2 is a comparative summary for boot and shoe cut stock, 1880 to 1900, with per cent of increase for each decade.

TABLE 2.—BOOT AND SHOE CUT STOCK: COMPARATIVE SUMMARY, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900	1890	1880	1890 to 1900	1880 to 1890
Number of establishments	342	344	172	[1]0.6	100.0
Capital	$7,003,080	$5,401,834	$1,210,300	29.6	346.3
Salaried officials, clerks, etc.:					
Number	342	[2]511	([3])	[1]33.1	.....
Salaries	$302,889	[2]$432,240	([3])	[1]29.9	.....
Wage-earners, average number	6,155	4,992	2,885	23.3	73.0
Total wages	$2,230,691	$1,891,031	$735,482	18.0	157.1
Men, 16 years and over	3,784	3,152	1,235	20.1	155.2
Wages	$1,700,316	$1,462,389	([3])	16.3	.....
Women, 16 years and over	2,212	1,738	1,422	27.3	22.2
Wages	$504,993	$410,164	([3])	23.1	.....
Children, under 16 years	159	102	228	55.9	[1]55.3
Wages	$25,382	$18,478	([3])	37.4	.....
Miscellaneous expenses	$490,548	$411,472	([4])	19.2	.....
Cost of materials used	$17,800,282	$13,744,655	$5,939,249	29.5	131.4
Value of products	$23,242,892	$17,903,846	$7,531,635	29.8	137.7

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table.
[3] Not reported separately.
[4] Not reported.

For an accurate basis of comparison of the boot and shoe factory returns of 1900 with previous census years, the figures for the increase in number of wage-earners employed, wages paid, and value of product for the cut-sole manufacture should be considered. A considerable

portion of cut-leather product is sold for custom work and repairing, but so much of the increase as comes from sales to the shoe factories will account for comparative reductions in the number of shoe-factory employees and the total wages paid, as well as for some of the increase in the cost of materials used.

The manufacture of saddlery and harness, leather goods, pocketbooks, trunks, and valises, as also leather belting and hose, all show large percentages of increase in the value of products. In these lines, unlike leather and boots and shoes, there has been an active competition from imports. The industries have made steady progress, and now have pretty good control of the home market, in addition to developing a considerable export trade.

Table 3 is a comparative summary for saddlery and harness, 1850 to 1900, with per cent of increase for each decade.

TABLE 3.—SADDLERY AND HARNESS: COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS,						PER CENT OF INCREASE.				
	1900	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	12,934	7,931	7,999	7,607	3,621	3,515	63.1	[1]0.9	5.2	110.1	3.0
Capital	$43,354,136	$35,346,620	$16,508,019	$13,935,961	$6,478,184	$3,969,379	22.7	114.1	18.5	115.1	63.2
Salaried officials, clerks, etc., number	1,976	[2]7,654	[3]	[3]	[3]	[3]	[1]74.2	.....	.....	.....	.....
Salaries	$1,587,651	[2]$5,121,927	[3]	[3]	[3]	[3]	[1]69.0	.....	.....	.....	.....
Wage-earners, average number	24,123	22,672	21,446	23,557	12,285	12,958	6.4	5.7	[1]9.0	91.8	[1]5.2
Total wages	$10,725,647	$10,908,918	$7,997,752	$7,046,207	$4,150,365	$3,154,008	[1]1.7	36.4	13.5	69.8	31.6
Men, 16 years and over	22,352	21,376	20,024	22,716	11,963	12,598	4.6	6.8	[1]11.8	89.9	[1]5.0
Wages	$10,356,924	$10,596,124	[3]	[3]	[3]	[3]	[1]2.2	.....	.....	.....	.....
Women, 16 years and over	1,147	962	561	375	322	36C	19.2	71.5	49.6	16.5	[1]10.6
Wages	$280,670	$265,395	[3]	[3]	[3]	[3]	5.8	.....	.....	.....	.....
Children, under 16 years	624	334	861	466	[3]	[3]	86.8	[1]61.2	84.8	.....	.....
Wages	$88,053	$47,399	[3]	[3]	[3]	[3]	85.8	.....	.....	.....	.....
Miscellaneous expenses	$2,996,787	$2,666,690	[4]	[4]	[4]	[4]	12.4	.....	.....	.....	.....
Cost of materials used	$33,127,926	$24,674,225	$19,968,716	$16,068,810	$6,606,415	$4,427,006	34.3	23.6	24.3	143.2	49.2
Value of products, including custom work and repairing	$62,630,902	$52,970,801	$38,081,643	$32,709,981	$14,169,037	$9,935,474	18.2	39.1	16.4	130.9	42.6

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table.
[3] Not reported separately.
[4] Not reported.

The statistics show that the value of products of this manufacture have increased more than sixfold during the half century.

Table 4 is a comparative summary for leather goods, pocketbooks, trunks, and valises, 1860 to 1900, with per cent of increase for each decade.

TABLE 4.—LEATHER GOODS, POCKETBOOKS, TRUNKS, AND VALISES: COMPARATIVE SUMMARY, 1860 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.					PER CENT OF INCREASE.			
	1900	1890	1880	1870	1860	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870
Number of establishments	772	613	378	295	214	25.9	62.2	28.1	37.9
Capital	$13,505,819	$11,148,694	$3,961,256	$2,638,389	$1,244,000	21.1	181.4	50.1	112.1
Salaried officials, clerks, etc., number	1,473	[1]1,234	[2]	[2]	[2]	19.4	.....	.....	.....
Salaries	$1,400,308	[1]$1,253,552	[2]	[2]	[2]	11.7	.....	.....	.....
Wage-earners, average number	14,990	10,074	6,998	4,329	3,160	48.8	44.0	61.6	37.0
Total wages	$5,679,767	$4,448,796	$2,787,726	$2,171,416	$901,741	27.7	62.5	26.1	140.8
Men, 16 years and over	10,738	8,122	5,574	3,302	2,298	32.2	45.7	68.8	43.7
Wages	$4,702,553	$3,973,310	[2]	[2]	[2]	18.4	.....	.....	.....
Women, 16 years and over	3,510	1,610	801	750	862	118.0	101.0	6.8	[3]13.0
Wages	$858,715	$421,617	[2]	[2]	[2]	103.7	.....	.....	.....
Children, under 16 years	742	342	623	277	[2]	117.0	[3]45.1	124.9	.....
Wages	$118,499	$53,869	[2]	[2]	[2]	120.0	.....	.....	.....
Miscellaneous expenses	$1,799,977	$970,224	[4]	[4]	[4]	85.5	.....	.....	.....
Cost of materials used	$13,485,761	$8,785,822	$5,951,039	$3,889,695	$1,990,573	53.5	47.6	53.0	95.4
Value of products, including custom work and repairing	$26,905,814	$18,814,885	$11,068,749	$9,091,543	$4,163,956	43.0	70.0	21.7	118.3

[1] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table.
[2] Not reported separately.
[3] Decrease.
[4] Not reported.

It will be observed that the increase in value of products during the forty years was more than sixfold.

Table 5 is a comparative summary for leather belting and hose, 1850 to 1900, with per cent of increase for each decade.

TABLE 5.—LEATHER BELTING AND HOSE: COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.						PER CENT OF INCREASE.				
	1900	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	105	93	96	91	46	8	12.9	[1]3.1	5.5	97.8	475.0
Capital	$7,410,219	$4,973,420	$2,748,799	$2,118,577	$588,000	$40,800	49.0	80.9	29.7	260.3	1,341.2
Salaried officials, clerks, etc., number	443	[2]279	[3]	[3]	[3]	[3]	58.8	.....	.....	.....	.....
Salaries	$484,874	[2]$334,139	[3]	[3]	[3]	[3]	45.1	.....	.....	.....	.....
Wage-earners, average number	1,607	1,342	1,227	808	354	39	24.2	9.4	51.9	128.2	807.7
Total wages	$913,937	$780,615	$606,087	$454,187	$134,952	$15,208	17.1	28.8	33.4	236.6	787.4
Men, 16 years and over	1,605	1,286	1,138	784	329	36	24.8	13.0	45.2	138.3	813.9
Wages	$899,643	$768,156	[3]	[3]	[3]	[3]	17.1	.....	.....	.....	.....
Women, 16 years and over	28	36	39	8	25	3	[1]22.2	7.7	387.5	[1]68.0	733.3
Wages	$8,173	$9,743	[3]	[3]	[3]	[3]	[1]16.1	.....	.....	.....	.....
Children, under 16 years	34	20	50	16	[3]	[3]	70.0	[1]60.0	212.5	.....	.....
Wages	$6,121	$2,716	[3]	[3]	[3]	[3]	125.4	.....	.....	.....	.....
Miscellaneous expenses	$418,155	$268,278	[4]	[4]	[4]	[4]	55.9	.....	.....	.....	.....
Cost of materials used	$7,500,413	$6,132,704	$5,019,853	$3,231,204	$915,271	$111,785	22.3	22.2	55.4	253.0	718.8
Value of products	$10,623,177	$8,633,634	$6,525,737	$4,558,048	$1,481,750	$160,500	23.0	32.3	43.2	207.6	823.2

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table.
[3] Not reported separately.
[4] Not reported.

Since 1850 this manufacture has increased from $160,500 to $10,623,177, or over sixty-six fold.

Table 6 is a comparative summary for the manufacture of leather, tanned, curried, and finished, at the censuses of 1850 to 1900, inclusive, with the percentages of increase for each decade.

TABLE 6.—LEATHER, TANNED, CURRIED, AND FINISHED: COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.						PER CENT OF INCREASE.				
	1900	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	1,306	1,787	5,628	7,569	5,188	6,686	[1]26.9	[1]68.2	[1]25.6	45.9	[1]22.4
Capital	$173,977,421	$98,088,698	$78,383,911	$61,124,812	$39,025,620	$22,774,795	77.4	33.7	20.1	56.6	71.3
Salaried officials, clerks, etc., number	2,442	[2]2,635	[3]	[3]	[3]	[3]	[1]7.3	.....	.....	.....	.....
Salaries	$3,158,842	[2]$2,735,890	[3]	[3]	[3]	[3]	15.5	.....	.....	.....	.....
Wage-earners, average number	52,109	42,392	40,282	35,243	26,246	25,595	22.9	5.2	14.3	34.3	2.5
Total wages	$22,591,091	$21,249,989	$16,503,828	$14,505,775	$8,175,508	$6,541,678	6.3	28.8	13.8	77.4	25.0
Men, 16 years and over	50,402	41,733	39,081	34,423	25,858	25,129	20.8	6.8	13.5	33.1	2.9
Wages	$22,140,234	$21,094,335	[3]	[3]	[3]	[3]	5.0	.....	.....	.....	.....
Women, 16 years and over	1,173	264	475	353	388	466	344.3	[1]44.4	34.6	[1]9.0	[1]16.7
Wages	$339,167	$82,699	[3]	[3]	[3]	[3]	310.1	.....	.....	.....	.....
Children, under 16 years	534	395	726	467	[3]	[3]	35.2	[1]45.6	55.5	.....	.....
Wages	$111,690	$72,955	[3]	[3]	[3]	[3]	53.1	.....	.....	.....	.....
Miscellaneous expenses	$7,023,416	$5,397,672	[4]	[4]	[4]	[4]	30.1	.....	.....	.....	.....
Cost of materials used	$155,000,004	$122,946,721	$156,384,117	$118,569,634	$49,812,659	$26,429,881	26.1	[1]21.4	31.9	138.0	88.5
Value of products, including custom work	$204,038,127	$172,136,092	$200,264,944	$157,237,597	$75,698,747	$48,457,898	18.5	[1]14.0	27.4	107.7	74.2

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 17.)
[3] Not reported separately.
[4] Not reported.

Table 6 shows a notable decrease in the number of establishments from 1870 to 1900, but the capital has largely increased from decade to decade during the entire half century, the percentage of gain for the decade from 1890 to 1900 being the greatest, 77.4 per cent. The decrease in the number of establishments is most marked from 1880 to 1890, when there was a loss of 3,841 or 68.2 per cent. The census of 1900 shows a further falling off of 26.9 per cent. That there were fewer establishments in 1880 than ten years previous is due, doubtless, in a measure, to the more general introduction of labor-saving machinery. The inventive genius which had been applied to the working out of the problem of producing leather with less hand work was then just beginning to find appreciation. Large quantities of machinery adapted to the various processes of manufacture were installed, superseding much hand work and resulting in the absorption of many of the smaller concerns for which the competition became too sharp.

It is a curious feature of the business that, while in nearly every other industry advantage has been taken of labor-saving devices as they have been perfected, leather manufacturers were inclined, until about 1880, to discourage any attempt to supersede manual labor with machinery. They preferred, also, to adhere to the formulas and tanning processes which had been handed down for generations from father to son, rather than to take advantage of the scientific knowledge which the chemists had to offer them in the way of improved and more economical methods. As a result of these prejudices, the evolution of the business, until recently, was

very slow. During the past twenty years, however, the most radical changes have taken place, so that this industry has been completely revolutionized, and the up-to-date leather manufactory is now equipped with numerous appliances for manipulating the hide during the various stages through which it passes from the lime vat to the leather-stretching and measuring machines. Many patented processes and compounds for tanning and tawing, as well as for depilating hides and skins, are also in use, so that it may be said with truth that the present-day leather manufacturer is no less enterprising in the use of what modern invention has to offer him than the leaders in any other line of productive industry.

The introduction of machinery, however, accounts for only a part of the apparent discrepancy in the figures as given decade by decade. In 1870 and 1880 there were, without doubt, many duplications, as under the system then employed tanning and currying were considered as separate industries. As a consequence, when these branches of the leather business were carried on by the same firm, a distinction was made, and the tanning and the currying branches were each credited as supporting separate establishments. Thus in 1880 there were 2,319 establishments classified under "Leather, curried," and 3,105 under "Leather, tanned." In 1870 the total included 4,237 establishments under "Leather, tanned," and 3,083 under "Leather, curried." In 1900, as at the census of 1890, currying and tanning were treated as one industry.

Still another cause for the decrease in the number of establishments, applicable to the past ten years, is found in the combination of the majority of the sole-leather tanneries and a considerable number of the tanneries producing upper leather. In accordance with the policy of the management of these combinations, many of the plants which were in operation when they were acquired by them have been shut down and dismantled. As a result, in part, of these consolidations there has been a decrease in the number of salaried officials, clerks, etc., the total for 1900 being 2,442, as compared with 2,635 in 1890, a falling off of 7.3 per cent. The salaries paid, however, show an increase of 15.5 per cent. The average number of wage-earners has increased since the last decade from 42,392 to 52,109, or 22.9 per cent. The largest relative increase was in the average number of women, an increase of 909, or 344.3 per cent. This is the more marked, because every preceding decade but one, since 1850, showed a decrease in this class of wage-earners, the number employed in 1850—466—having decreased to 264 in 1890. The causes assigned for these changed conditions are discussed at length in connection with Table 11. Children under 16 years of age show an increase of 35.2 per cent from 1890 to 1900, compared with a decrease of 45.6 during the decade from 1880 to 1890.

The total wages show a steady increase for each decade of the half century. The increase in 1900 over 1890 is 6.3 per cent—the increase in wages of men being 5 per cent; of women, 310.1 per cent; and of children, 53.1 per cent. As wages for the different classes of wage-earners were not reported separately previous to 1890, no comparison is possible except for the past decade.

Miscellaneous expenses, which also were not reported separately previous to 1890, show an increase of 30.1 per cent during the decade 1890 to 1900. The cost of materials used increased 26.1 per cent over 1890. There was a decrease of 21.4 per cent from 1880 to 1890. In 1880 the increase over 1870 was 31.9 per cent, following the extraordinary advance in cost at the census of 1870 of 138 per cent.

The value of products, including custom work, reported for 1900 was $204,038,127 as against $172,136,092 in 1890, an increase of 18.5 per cent. The decade just preceding showed a decrease of 14 per cent, that ending in 1880 an increase of 27.4 per cent, and that ending with 1870 an increase of 107.7 per cent.

Table 7 is a summary of all establishments, 1900, including establishments with a product of less than $500.

There were 249 establishments having a product of less than $500 each, the total value of products being $54,795, or an average of $220 for each establishment.

TABLE 7.—LEATHER, TANNED, CURRIED, AND FINISHED: SUMMARY FOR ALL ESTABLISHMENTS, 1900.

CLASSES.	Number of establishments.	Capital.	Proprietors and firm members.	WAGE-EARNERS.		Miscellaneous expenses.	COST OF MATERIALS USED.				Value of products, including custom work.
				Average number.	Total wages.		Total.	Purchased in raw state.	Purchased in partially manufactured form.	Fuel, freight, etc.	
Total	1,555	$174,078,125	1,740	52,123	$22,593,004	$7,025,633	$155,035,378	$134,533,099	$17,653,537	$2,848,742	$204,092,922
Establishments with a product of less than $500	249	100,704	267	14	1,913	2,217	35,374	30,446	4,467	461	54,795
All other establishments	1,306	173,977,421	1,473	52,109	22,591,091	7,023,416	155,000,004	134,502,653	17,649,070	2,848,281	204,038,127

A large proportion of these so-called tanneries are located in the South, and the owners or proprietors are usually engaged in some other business, the tanning being done largely for local accommodation. It is doubtful whether many of these establishments are entitled to be classified as tanneries in the general acceptation of the term, but as they were reported at former censuses under this classification, it was considered best to include them at the census of 1900.

Table 8 is a comparative summary showing the totals for the manufacture of leather, tanned, curried, and finished, by states, as reported at the censuses of 1890 and 1900, with kinds, quantities, and values of products.

TABLE 8.—LEATHER, TANNED, CURRIED, AND FINISHED:

		Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES.			
							Total.		Men, 16 years and over.	
					Number.	Salaries.	Average number.	Wages.	Average number.	Wages.
1	United States	1900	1,806	$173,977,421	2,442	$3,158,842	52,109	$22,591,091	50,402	$22,140,234
		1890	1,787	98,088,698	[1]2,635	[1]2,736,890	42,392	21,249,989	41,733	21,094,335
2	Alabama	1900	18	464,005	8	7,200	165	71,440	165	71,440
		1890	21	38,045	10	3,317	41	7,997	39	7,797
3	Arkansas	1900	3	2,190	.....	.....	3	750	3	750
		1890	5	13,525	1	250	8	2,564	8	2,564
4	California	1900	45	4,820,205	75	106,458	1,454	870,973	1,437	864,719
		1890	62	3,119,298	94	119,912	1,099	706,419	1,095	705,019
5	Connecticut	1900	7	639,408	12	13,506	179	90,058	168	87,158
		1890	7	369,021	21	16,448	103	50,995	99	49,745
6	Delaware	1900	20	5,178,804	156	166,139	2,457	1,044,903	1,784	861,094
		1890	20	1,791,259	85	106,560	1,364	624,812	1,163	581,157
7	Georgia	1900	36	1,434,390	26	20,413	410	92,030	408	91,980
		1890	32	373,610	38	22,444	217	71,925	215	71,805
8	Illinois	1900	27	4,751,474	86	176,646	2,263	1,145,170	2,242	1,141,259
		1890	30	4,876,671	83	104,604	1,864	1,086,818	1,859	1,085,896
9	Indiana	1900	23	1,321,455	27	26,872	400	161,942	400	161,942
		1890	46	780,757	36	28,764	321	144,616	319	144,501
10	Kentucky	1900	23	4,681,388	58	61,063	810	321,658	810	321,658
		1890	31	2,519,339	53	61,097	582	289,931	579	288,969
11	Louisiana	1900	3	6,193	.....	.....	4	1,341	4	1,341
		1890	4	35,060	3	3,936	17	8,424	17	8,424
12	Maine	1900	31	1,376,106	36	26,798	587	229,268	584	228,761
		1890	51	2,231,702	59	48,950	852	362,841	841	359,529
13	Maryland	1900	22	1,088,725	18	17,429	455	156,182	442	152,716
		1890	32	594,478	43	33,109	313	115,439	306	113,399
14	Massachusetts	1900	119	15,317,940	355	405,648	7,010	3,379,698	6,955	3,358,807
		1890	197	11,646,893	368	465,068	7,777	4,240,911	7,748	4,232,258
15	Michigan	1900	27	5,214,042	72	95,507	1,427	559,142	1,425	558,498
		1890	20	1,200,982	41	35,418	337	163,176	336	162,964
16	Minnesota	1900	9	23,060	.....	.....	18	3,550	18	3,550
		1890	10	482,457	8	7,325	104	52,942	103	52,917
17	Mississippi	1900	4	2,460	.....	.....	1	240	1	240
		1890	4	14,220	3	1,289	10	2,757	10	2,757
18	Missouri	1900	9	922,083	20	35,360	185	98,578	184	98,422
		1890	17	691,353	18	30,600	310	163,687	310	163,687
19	New Hampshire	1900	12	1,900,277	51	54,275	552	219,292	521	209,728
		1890	18	1,303,992	41	36,479	668	301,077	654	297,907
20	New Jersey	1900	77	9,906,119	276	412,847	4,178	2,057,197	4,101	2,038,955
		1890	66	6,314,233	175	240,037	3,121	1,857,540	3,081	1,846,235
21	New York	1900	147	19,062,817	193	264,724	6,530	2,775,115	6,397	2,738,721
		1890	228	14,624,047	398	421,914	6,280	2,957,507	6,216	2,937,286
22	North Carolina	1900	75	1,299,798	28	29,259	366	105,132	366	105,132
		1890	55	116,364	25	10,218	107	24,188	104	23,978
23	Ohio	1900	58	5,822,580	74	80,680	1,384	617,409	1,384	617,409
		1890	113	4,380,015	122	119,410	1,447	708,332	1,441	707,009
24	Oregon	1900	16	173,144	1	900	58	27,582	52	27,382
		1890	13	128,750	15	11,816	80	18,196	30	18,196
25	Pennsylvania	1900	254	57,320,227	506	643,895	13,396	5,467,518	12,839	5,311,200
		1890	410	30,165,420	616	567,168	10,956	5,222,421	10,786	5,172,897
26	Rhode Island	1900	5	157,900	6	7,930	69	32,092	67	31,572
		1890	9	400,784	17	19,033	86	50,145	86	50,145
27	South Carolina	1900	5	5,595	.....	.....	10	2,000	10	2,000
		1890	4	12,093	1	117	12	3,116	12	3,116
28	Tennessee	1900	44	3,444,197	29	35,496	803	239,870	799	239,586
		1890	60	732,280	46	28,563	612	186,469	611	186,394
29	Texas	1900	11	24,763	2	1,300	29	9,216	25	8,638
		1890	7	92,450	5	2,296	32	20,480	32	20,480
30	Utah	1900	4	8,625	.....	.....	3	1,500	3	1,500
		1890	4	50,820	1	416	23	16,030	23	16,030
31	Vermont	1900	8	160,906	5	5,450	68	31,225	68	31,225
		1890	17	266,640	14	15,509	146	64,615	146	64,615
32	Virginia	1900	65	4,032,387	59	84,602	889	313,677	886	313,256
		1890	82	945,014	58	37,948	401	121,078	389	119,303
33	Washington	1900	3	17,600	.....	.....	3	2,125	3	2,125
		[2]1890	.....	.....	.....	.....	.....	.....	.....	.....
34	West Virginia	1900	46	5,049,615	37	62,889	664	224,444	663	224,399
		1890	50	567,072	30	15,450	210	88,487	210	88,487
35	Wisconsin	1900	42	18,283,591	230	314,956	5,262	2,241,861	5,166	2,226,198
		1890	38	6,345,812	83	100,080	2,487	1,271,887	2,461	1,266,657
36	All other states	[3]1900	8	63,351	1	600	22	6,963	22	6,963
		[4]1890	24	864,292	24	20,350	455	242,667	454	242,217

[1] Includes proprietors and firm members with their salaries; number only reported in 1900, but not included in this table. (See Table 17).
[2] Included in "all other states."

COMPARATIVE SUMMARY BY STATES, 1890 AND 1900.

AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES—continued.				Miscellaneous expenses.	Cost of materials used.	PRODUCTS.			
Women, 16 years and over.		Children, under 16 years.				Aggregate value.	Rough leather.		
Average number.	Wages.	Average number.	Wages.				Sides.	Value.	
1,173	$339,167	534	$111,690	$7,023,416	$155,000,004	$204,038,127	4,229,634	$6,864,345	1
264	82,699	395	72,955	5,397,672	122,946,721	172,136,092	2,329,112	5,436,678	
				44,107	672,017	1,005,358	3,040	7,818	2
1	150	1	50	1,546	42,539	77,066	4,200	10,000	
				37	3,590	5,859			3
				454	12,765	16,684			
11	4,044	6	2,210	180,795	5,809,428	7,405,981	130,595	309,405	4
2	1,000	2	400	183,428	4,165,410	5,729,278	10,000	20,000	
11	2,900			23,087	681,399	891,478	20,392	24,470	5
4	1,250			25,763	499,377	619,139			
583	165,865	90	17,944	226,083	7,027,715	9,400,504	27,496	56,066	6
64	18,898	137	24,757	120,371	2,823,160	4,106,894			
		2	50	24,724	928,129	1,187,697	71,502	161,091	7
		2	120	12,721	259,585	433,853	1,000	1,400	
		21	3,911	181,350	5,784,474	7,847,835	150,976	74,470	8
		5	422	160,141	5,770,146	8,240,803	104,100	282,300	
				61,747	1,187,397	1,589,802	31,000	15,250	9
		2	115	33,074	911,334	1,241,306	16,066	42,912	
				112,659	2,881,896	3,757,016	14,014	67,071	10
2	780	1	182	109,684	2,573,299	3,487,570	40	200	
				78	6,355	10,157			11
				625	44,889	69,131			
		3	507	102,332	1,943,204	2,451,718	3,450	3,104	12
11	3,312			117,141	2,307,343	3,363,672	94,920	234,785	
8	2,496	5	970	40,360	1,411,457	1,754,102	125,760	260,350	13
6	1,740	1	300	42,315	722,474	986,430			
48	19,307	7	1,584	662,553	19,793,757	26,067,714	254,889	293,434	14
27	8,308	2	350	854,286	20,181,807	28,044,815	392,678	822,414	
		2	644	248,297	4,697,367	6,015,590	122,757	128,426	15
1	212			52,774	1,273,315	1,743,760			
				483	9,803	19,336	700	1,600	16
		1	25	9,458	518,099	700,217			
				13	2,202	3,556			17
				818	15,203	22,077	20	60	
		1	156	27,846	557,181	816,720			18
				25,344	1,111,577	1,511,990			
31	9,564			145,903	2,053,367	2,664,942	2,071	1,168	19
14	3,170			93,238	2,303,363	2,988,209	30,000	90,000	
39	9,900	38	8,342	507,753	9,532,507	13,747,155	329,751	453,053	20
20	6,416	20	4,389	331,070	7,207,747	11,069,467	108,520	364,680	
122	33,510	11	2,884	558,470	17,424,300	23,205,991	679,928	1,130,248	21
41	14,980	28	5,241	806,391	16,354,540	23,454,853	605,096	1,301,919	
				32,685	1,129,402	1,502,378	105,857	475,810	22
		3	210	3,913	115,507	190,887	125	156	
				160,315	3,774,298	5,182,065	65,060	38,617	23
2	575	4	748	193,210	5,134,248	6,701,670	80,000	434,500	
1	150			4,551	190,184	249,728	2,586	1,456	24
				3,510	110,522	164,193			
287	84,078	270	62,240	2,432,724	42,403,503	55,615,009	666,080	1,318,801	25
39	15,578	181	33,946	1,650,023	35,641,274	49,931,716	166,700	319,900	
2	520			5,832	207,317	292,939	200	1,000	26
				15,433	332,315	447,295			
				525	12,743	18,387	3,360	8,400	27
				126	12,120	21,900			
		4	284	91,197	2,184,311	2,802,117	211,749	557,948	28
		1	75	31,785	755,707	1,266,556			
1	50	3	528	1,158	52,207	76,508	3,000	450	29
				1,477	57,473	90,890			
				215	3,482	5,863			30
				1,297	38,277	78,789			
				10,694	300,162	365,099	102,200	160,300	31
				15,377	416,747	592,093	22,400	42,210	
		3	421	252,548	3,695,817	4,716,920	128,378	489,642	32
3	650	9	1,125	48,156	805,487	1,224,800	950	1,975	
				580	25,701	32,605			33
		1	45	144,458	2,541,197	3,210,753	156,034	447,171	34
				28,465	680,298	896,120	25	75	
29	6,783	67	8,970	735,767	16,040,304	20,074,373	816,809	377,726	35
26	5,230			381,436	8,782,182	11,161,850	691,772	1,475,872	
				1,890	31,881	44,877			36
1	450			42,822	1,016,032	1,460,119	500	1,320	

[3] See note 3, Table 9.

[4] See note 4, Table 9.

TABLE 8.—LEATHER, TANNED, CURRIED, AND FINISHED:

		PRODUCTS—continued.								
		Sole leather.								
		Year.	Total.		Oak.		Union.		Hemlock.	
			Sides.	Value.	Sides.	Value.	Sides.	Value.	Sides.	Value.
1	United States	1900	15,472,072	$55,481,625	2,562,814	$13,359,836	3,096,162	$12,807,262	[1] 9,813,096	[1] $29,314,527
		1890	12,605,377	38,411,720	1,645,803	6,702,410	2,898,630	10,497,942	8,060,944	21,211,368
2	Alabama	1900	218,790	974,000	218,550	973,250			240	750
		1890	3,894	7,698	3,644	6,698			250	1,000
3	Arkansas	1900								
		1890	40	55	40	55				
4	California	1900	556,063	2,532,988	556,063	2,532,988				
		1890	387,154	1,542,562	387,154	1,542,562				
5	Connecticut	1900								
		1890								
6	Delaware	1900								
		1890	150	230	150	230				
7	Georgia	1900	57,952	300,985	57,952	300,985				
		1890	22,902	42,427	22,902	42,427				
8	Illinois	1900	68,324	310,296					68,324	310,296
		1890	261,000	869,500	30,000	50,000			231,000	819,500
9	Indiana	1900								
		1890	13,600	35,520	13,600	35,520				
10	Kentucky	1900	442,975	2,314,779	442,975	2,314,779				
		1890	236,625	1,184,401	236,625	1,184,401				
11	Louisiana	1900								
		1890	50	288	50	288				
12	Maine	1900	685,659	1,451,679					685,659	1,451,679
		1890	695,854	1,371,728					695,854	1,371,728
13	Maryland	1900	48,310	221,476	23,900	134,576	24,410	86,900		
		1890	76,146	297,829	76,146	297,829				
14	Massachusetts	1900	69,980	267,500			60,000	245,000	9,980	22,500
		1890	397,838	1,005,065					397,838	1,005,065
15	Michigan	1900	914,954	3,090,684	25,000	75,000			889,954	3,015,684
		1890	177,802	468,038	36,082	112,500			141,720	350,538
16	Minnesota	1900	115	345					115	345
		1890	200	480	200	480				
17	Mississippi	1900	50	125	50	125				
		1890	480	860	480	860				
18	Missouri	1900	232	1,392	232	1,392				
		1890								
19	New Hampshire	1900								
		1890								
20	New Jersey	1900								
		1890	1,500	3,750	1,500	3,750				
21	New York	1900	1,446,242	4,655,818			401,879	1,430,899	1,044,363	3,224,919
		1890	2,516,874	6,809,762	242,500	835,620	233,592	676,286	2,040,782	5,297,856
22	North Carolina	1900	31,389	124,449	31,289	124,249			100	200
		1890	7,728	15,300	7,728	15,300				
23	Ohio	1900	134,962	1,016,048	134,962	1,016,048				
		1890	23,440	97,700	23,440	97,700				
24	Oregon	1900	806	3,080			6	30	800	3,000
		1890	160	670	120	480			40	190
25	Pennsylvania	1900	8,183,522	28,691,603	335,894	1,854,243	2,366,322	10,058,019	5,481,306	16,779,341
		1890	7,250,180	23,049,366	304,466	1,341,135	2,664,928	9,821,486	4,380,786	11,886,795
26	Rhode Island	1900								
		1890								
27	South Carolina	1900	50	125	50	125				
		1890	200	500	200	500				
28	Tennessee	1900	205,942	1,086,284	205,942	1,086,284				
		1890	132,671	536,005	132,661	535,985	10	20		
29	Texas	1900	1,022	3,752	490	1,583			532	2,169
		1890								
30	Utah	1900	600	1,975	200	375			400	1,600
		1890	6,200	30,800	6,200	30,800				
31	Vermont	1900								
		1890	20,100	50,250					20,100	50,250
32	Virginia	1900	409,166	2,189,099	333,366	1,836,629	75,800	352,470		
		1890	64,607	306,420	62,757	303,420	100	200	1,750	2,800
33	Washington	1900								
		[2] 1890								
34	West Virginia	1900	363,954	1,742,354	195,874	1,107,080	167,745	633,944	335	1,330
		1890	56,358	261,875	56,358	261,875				
35	Wisconsin	1900	1,630,988	4,500,714					[1] 1,630,988	[1] 4,500,714
		1890	150,824	425,646					150,824	425,646
36	All other states	[3] 1900	25	125	25	125				
		[4] 1890	800	2,000	800	2,000				

[1] Includes 2,100 chrome sides, valued at $8,966.

[2] Included in "all other states."

[3] See note 3, Table 9.

[4] See note 4, Table 9.

COMPARATIVE SUMMARY BY STATES, 1890 AND 1900—Continued.

PRODUCTS—continued.									
Calf and kip skins and upper leather.	Goatskins.	Sheepskins.		Belting leather.		Harness leather.		All other leather and all other products, including by-products, offal, etc., and amount received for tanning and currying for others.	
Value.	Value.	Number.	Value.	Sides.	Value.	Sides.	Value.		
$41,848,552 31,417,236	$35,672,981 29,847,141	20,290,985 18,265,555	$8,353,755 7,520,702	1,472,016 843,322	$7,092,778 3,972,986	3,444,616 3,228,794	$16,712,056 11,920,341	$32,012,035 43,699,288	1
3,496 20,845	864 1,339	425 701	225 616	.....	.....	2,650 7,210	9,030 13,520	9,925 23,003	2
950 2,020	60 22	150 150	45 370	.....	.....	2,000 2,800	4,500 4,830	304 9,387	3
345,597 732,574	6,040 40,108	1,135,250 1,511,435	318,900 413,184	.....	.....	379,323 186,538	1,976,755 818,179	1,916,296 2,019,971	4
8,340 6,155	.....	.....	.....	57,240 32,038	404,223 160,100	1,201 78	5,142 180	449,303 268,020	5
132,000 10,540	8,634,800 4,015,694	175,272 100,000	61,921 79,500	17,588	127,580	.....	.....	388,137 700	6
						150	230		
135,112 165,206	2,323 288	31,150 4,150	10,312 1,923	61,505	260,190	56,200 53,842	226,132 96,152	91,552 126,457	7
5,225,588 3,353,615	 1,388,250	1,263,323 1,460,000	540,193 687,500	6,400	33,080	34,303 172,480	170,000 578,538	1,494,208 1,081,100	8
43,520 109,038	 45	10,335 7,330	5,606 4,774	43,939	188,599	193,777 151,382	1,011,613 575,501	325,214 473,516	9
1,000 40,113	70 1,475	88,961 48,640	44,410 25,222	6,532 30,206	33,426 141,974	206,748 237,112	1,091,901 936,393	204,359 1,157,792	10
1,267 4,949	200 3,575	6,000 58,000	3,000 46,000	.....	.....	100 524	500 2,161	5,190 12,158	11
358,708 218,412	 8	1,940,870 2,427,416	472,520 686,860	104 10,250	424 35,055	230 1,050	950 3,890	164,328 812,934	12
424,172 162,781	23,750 23,738	330,890 238,435	137,400 194,493	36,188 13,874	162,406 53,477	16,634 20,690	91,089 64,397	433,509 189,715	13
11,292,310 5,552,119	6,012,205 6,616,902	8,590,563 5,295,676	3,636,839 2,290,819	226,443 53,758	945,723 223,051	4,600	14,800	3,604,903 11,534,445	14
818,038 99,442	....	617,423 250,640	234,336 50,305	 7,800	 58,100	212,386 65,400	989,332 248,910	754,274 823,965	15
1,615 4,302	10 1	1,124 600,825	773 120,620	 100	 250	655 8,600	2,995 34,271	11,998 540,293	16
2,800 14,790	181 48	 60	 94	 192	 200	100 2,240	450 4,850	 1,175	17
500 39,200	204 1,860	629 124,000	522 43,560	52,946 48,000	242,095 320,000	72,386 101,248	337,467 375,550	184,540 731,820	18
218,149 679,447	200,928 6,800	1,153,904 904,200	434,915 242,500	155,853 40,400	862,711 190,000	87,214 600	189,826 2,400	757,245 1,777,062	19
2,255,070 6,044,614	3,061,738 2,770,000	454,988 259,925	283,012 204,912	.....	.....	33,865 5,800	177,846 14,850	7,516,436 1,376,661	20
8,346,177 6,232,612	1,898,957 3,291,986	2,997,036 3,120,000	1,360,885 1,386,719	13,250 706	89,053 3,112	146,341 159,740	765,500 645,294	4,959,353 3,783,449	21
71,857 72,404	1,212 416	3,089 2,312	1,214 1,066	116,400 100	556,175 240	29,156 23,479	89,184 44,024	182,477 57,281	22
55,648 296,165	1,775 390	86,670 211,166	39,535 119,137	140,891 100	678,187 500	336,015 540,928	1,831,651 2,194,852	1,520,604 3,558,426	23
7,970 19,735	250 25	2,365 54,300	1,140 16,435	.....	.....	31,579 11,750	142,790 36,245	93,092 91,083	24
2,699,743 3,180,668	15,796,782 11,122,211	1,090,822 856,243	600,423 431,613	5,846 410,452	33,275 1,854,036	450,352 760,763	2,491,722 3,018,726	3,982,660 6,955,201	25
22,615 4,500	....	201,600 12,000	106,500 6,500	6,200 25,000	47,000 40,000	....	....	115,824 396,295	26
630 7,500	25	125	52	.....	.....	2,850 6,000	8,355 12,000	800 1,900	27
19,068 69,581	305 145	3,471 841	1,756 413	157,832 60,000	782,800 360,000	53,105 84,890	195,263 226,197	208,693 74,215	28
3,494 28,566	886 795	12,249 8,000	5,657 7,879	200	800	5,165 13,200	19,876 28,050	41,594 30,600	29
2,875 2,395	 7	 75,008	 45,012	.....	.....	230 120	1,000 575	13	30
186,978 379,461	....	700 1,100	900 700	.....	.....	575 8,620	3,311 21,800	13,610 97,672	31
15,451 115,738	24 78	16,235 21,086	10,790 5,793	263,107 78,534	1,224,821 375,671	26,350 47,806	94,366 123,140	692,707 295,990	32
24,900	.....	6,400	2,650	.....	.....	.....	.....	5,055	33
.....	.....	.....	.....	.....	.....	.....	.....	.....	
14,986 51,769	 94	2,106 2,805	980 1,973	95,052 2,470	431,710 14,230	95,720 75,562	520,322 268,025	53,230 298,079	34
9,104,678 2,766,971	25,117 154,376	46,610 300,488	23,904 212,664	8,500 112	38,500 240	961,966 470,992	4,194,372 1,510,911	1,809,362 4,615,170	35
3,250 929,014	4,275 404,270	20,250 17,441	12,440 9,062	.....	.....	840 8,200	3,547 20,700	21,240 93,753	36

The aggregate capital was $173,977,421 in 1900, compared with $98,088,698 in 1890, an increase of 77.4 per cent. The decrease in number of establishments was 481, or 26.9 per cent. Pennsylvania was the leading state in 1900, having 254 establishments, with a capital of $57,320,227, and products valued at $55,615,009, an increase of $5,683,293 from 1890. New York had 147 establishments, with a capital of $19,062,817, and products valued at $23,205,991, or practically the same as for 1890; while Massachusetts showed 119 establishments, with a capital of $15,317,940, and products valued at $26,067,714, a decrease of $1,977,701. Wisconsin showed 42 establishments, with a capital of $18,283,591, and products valued at $20,074,373.

The decrease in the number of establishments was widely distributed, only 9 states showing an increase. The increase in capital was marked by the thinning out of the smaller concerns, either by absorption or by discontinuance. While there were but 9 establishments in Missouri in 1900, compared with 17 in 1890, a decrease of 47.1 per cent, the capital increased 33.4 per cent. Although New York lost 81 establishments, or 35.5 per cent, the total capital of the state showed an increase of $4,438,770. The same condition prevailed in Ohio, where, with a falling off of 55 in number of establishments, the capital increased $1,442,565. The capital of Massachusetts tanneries was $15,317,940 in 1900, compared with $11,646,893 in 1890, notwithstanding that there were 78 fewer establishments. This condition existed in 16 out of the 34 states separately named in the table, and in 2 others a large increase in capital during the decade was accompanied by no change in the number of establishments. The most notable exception, among states of large production, is furnished by Maine, where the decrease of 39.2 per cent in number of establishments was accompanied by a decrease of $855,596, or 38.3 per cent, in capital. The largest proportional increase was made in Wisconsin, where capital was $18,283,591 in 1900, compared with $6,345,812 in 1890. This was due to the establishing of new tanneries, as well as the enlargement of old ones, as is shown by the increase in number from 38 in 1890 to 42 in 1900.

Of the $204,038,127 in value of products, $6,864,345 was in rough leather, comprising 4,229,634 sides. This was an increase over 1890 of 1,900,522 sides, and of $1,427,667 in value. The largest quantity of rough leather was produced by Wisconsin, which turned out 816,809 sides, valued at $377,726. Pennsylvania followed with 666,080 sides, valued at $1,318,801; while New York produced 679,928 sides, valued at $1,130,248.

The Pennsylvania tanneries produced by far the largest quantity of sole leather, the output being 8,183,522 sides, valued at $28,691,603, out of the 15,472,072 sides, valued at $55,481,625, reported for the United States. This was 52.9 per cent of the total number of sides, and 51.7 per cent of their value. Wisconsin was next with 1,630,988 sides, valued at $4,500,714, as against 150,824 sides, valued at $425,646 in 1890. This increase in quantity and value of products was the most notable of that of any of the states, showing in the ten years a tenfold gain in the number of sides tanned and in their value. Similar conditions prevailed in Michigan, where, with an increase of 7 in the total number of tanneries in the state, the output of sole leather increased from 177,802 sides in 1890 to 914,954 in 1900, and in value from $463,038 to $3,090,684. New York, which had been a large producer of sole leather, showed a falling off in the output for 1900 of 1,070,632 sides from a total of 2,516,874 in 1890, the value being $6,809,762 in 1890 and $4,655,818 in 1900. This large decrease in production, amounting to 42.5 per cent, is in part accounted for by the decrease of 35.5 per cent in the whole number of establishments in the state. The other states producing sole leather valued at over $1,000,000 are California, $2,532,988; Kentucky, $2,314,779; Virginia, $2,189,099; West Virginia, $1,742,354; Ohio, $1,016,048; Tennessee, $1,086,284; and Maine, $1,451,679. That so large a proportion of the sole leather manufactured was produced in tanneries located in the West and Middle West was due to the proximity of hemlock and oak forests, from which were drawn the bark with which, either singly or combined as in the union tannage, this grade of leather is tanned.

The increase in the production of calf and kip skins and upper leather in the United States, from 1890 to 1900, was $10,431,316, or 33.2 per cent, out of a total of $41,848,552 for the latter year; but there was a decrease of 443, or 25.3 per cent, in the number of establishments reporting this product.

Massachusetts led in these varieties of leather, producing, in 1900, $11,292,310, out of a total of $41,848,552 for the United States. In 1890 the state reported $5,552,119 as the value of this product, showing an increase of 103.4 per cent for 1900. Wisconsin ranked next, with a value of $9,104,678, compared with $2,766,971 in 1890. New York produced $8,346,177, as against $6,232,612 ten years ago. Illinois produced $5,225,588, or $1,871,973 more than at the census of 1890. New Jersey showed a falling off in upper leather within the decade, the product for 1890 being $6,044,614, and for 1900, $2,255,070.

Goatskins were produced in 1900 to the value of $35,672,981 for the entire United States, as against $29,847,141 in 1890, an increase of 19.5 per cent. Pennsylvania took the lead with $15,796,782, followed by Delaware with $8,634,800, Massachusetts with $6,012,205, New Jersey with $3,061,738, New York with $1,898,957, and Illinois with $1,388,250. The output of sheepskins showed a small increase only, the number being 20,290,985, valued at $8,353,755, in 1900, and 18,265,555, valued at $7,520,702, in 1890. Of these there were tanned in Massachusetts 8,590,563, valued

at $3,636,839; in New York 2,997,036, valued at $1,360,885; and in Maine 1,940,870, valued at $472,520. Both New York and Maine showed a falling off in the number, the former of 3.9 per cent and the latter of 20 per cent.

The report on harness leather for 1900 presents the anomalous condition of an increase of 40.2 per cent in value of products, compared with 1890, while the increase in number of sides tanned was but 6.7 per cent. This difference may be accounted for in part by the higher cost of hides and, possibly, the better finish of the average harness leather, compared with ten years ago. But there is a difference in value in different states, as, for instance, the average value of the sides tanned for harness leather in Ohio was $5.45; in Missouri, $5.35; New Jersey, $5.25; and New York and Indiana, $5.23 and $5.22, respectively; while the average in North Carolina was only $3.06, and in Arkansas $2.25. These are, however, higher averages in each instance than those of 1890.

Wisconsin led in value, producing $4,194,372 out of the $16,712,056 for the United States. This is a gain of 177.6 per cent, with, however, an increase of only 104.2 per cent in number of sides. Pennsylvania followed Wisconsin, with $2,491,722, which is, however, a decrease of 17.5 per cent. California was next, having tanned 379,323 sides in 1900, valued at $1,976,755, a gain of 192,785 in number of sides and $1,158,576 in value. Ohio, though showing a decrease of 204,913 in number of sides and of $363,201 in value since 1890, produced in 1900, 336,015 sides, valued at $1,831,651. Kentucky manufactured a product valued at $1,091,901, as against $936,393 in 1890, while Indiana tanned 193,777 sides, valued at $1,011,613, also a gain over 1890. Every state included in the table, with the exceptions of Delaware, Rhode Island, and Washington, reported harness leather manufactured in 1900, but in many of them the quantity produced was insignificant, amounting, as in Louisiana, to only 100 sides, valued at $500.

The increase over 1890 in belting leather, as shown in the table, is 74.5 per cent in number of sides used, and 78.5 per cent in value. Pennsylvania, which, according to the census of 1890, manufactured 410,452 sides, valued at $1,854,036, made in 1900 only 5,846 sides, valued at $33,275; but Virginia, which tanned 78,534 sides for belting in 1890, valued at $375,671, turned out in 1900, 263,107 sides, valued at $1,224,821. Massachusetts showed an increase from 53,758 sides, valued at $223,051, to 226,443, valued at $945,723.

"All other leather," as shown by the table, includes leather for carriages, trunks, bags, pocketbooks, bookbinding, furniture, for the manufacture of gloves, and for many minor uses to which leather is adapted. This classification showed a decrease of $11,597,253.

Table 9 shows the rank of states according to capital, average number of wage-earners, total wages, and value of products, 1890 and 1900.

TABLE 9.—RANK OF STATES ACCORDING TO CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, TOTAL WAGES, AND VALUE OF PRODUCTS: 1890 AND 1900.

	Year.	CAPITAL.		WAGE-EARNERS.				VALUE OF PRODUCTS.	
				Average number.		Total wages.			
		Rank.	Amount.	Rank.	Number.	Rank.	Amount.	Rank.	Value.
United States	1900	.....	$173,977,421	.....	52,109	.....	$22,591,091	.....	$204,038,127
	1890	.....	98,088,698	.....	42,392	.....	21,249,989	.....	172,136,092
Alabama	1900	23	464,005	23	165	23	71,440	21	1,005,358
	1890	29	38,045	26	41	30	7,997	29	77,066
Arkansas	1900	34	2,190	31	3	33	750	33	5,859
	1890	32	13,525	33	8	33	2,564	33	16,684
California	1900	10	4,820,205	8	1,454	8	870,973	8	7,405,981
	1890	8	3,119,298	9	1,099	8	706,419	8	5,729,278
Connecticut	1900	22	639,408	22	179	22	90,058	22	891,478
	[1]1890	23	369,021	24	103	23	50,995	21	619,139
Delaware	1900	8	5,178,804	6	2,457	7	1,044,903	6	9,400,504
	[1]1890	11	1,791,259	8	1,364	9	624,812	9	4,106,894
Georgia	1900	16	1,434,390	18	410	21	92,030	20	1,187,697
	1890	22	378,610	19	217	20	71,925	23	433,853
Illinois	1900	11	4,751,474	7	2,263	6	1,145,170	7	7,847,835
	1890	6	4,876,671	6	1,864	6	1,086,318	6	8,240,803
Indiana	1900	18	1,321,455	19	400	17	161,942	18	1,589,802
	1890	15	780,757	16	321	16	144,616	16	1,241,306
Kentucky	1900	12	4,681,389	12	810	11	321,658	12	3,757,016
	[1]1890	9	2,519,339	12	582	12	289,931	10	3,487,570
Louisiana	1900	31	6,193	30	4	32	1,341	31	10,157
	1890	30	35,060	30	17	29	8,424	30	69,131

[1] Exclusive of establishments included in "all other states" in 1890, distributed as follows: Connecticut, 2, 1 leather, morocco, 1 leather, patent and enameled; Delaware, 1, leather, patent and enameled; Illinois, 1, leather, dressed skins; Kentucky, 1, leather, morocco; Maryland, 1, leather, morocco; Missouri, 1, leather, morocco; New York, 1, leather, patent and enameled; Ohio, 4, 2 leather, dressed skins; 1 leather, morocco, and 1 leather, patent and enameled; Pennsylvania, 1 leather, patent and enameled; Texas, 2, leather, dressed skins.

TABLE 9.—RANK OF STATES ACCORDING TO CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, TOTAL WAGES, AND VALUE OF PRODUCTS: 1890 AND 1900—Continued.

	Year.	CAPITAL.		WAGE-EARNERS.				VALUE OF PRODUCTS.	
				Average number.		Total wages.			
		Rank.	Amount.	Rank.	Number.	Rank.	Amount.	Rank.	Value.
Maine	1900	17	$1,376,106	15	587	14	$229,268	16	$2,451,713
	1890	10	2,231,702	10	852	10	362,841	11	3,363,672
Maryland	1900	20	1,088,725	17	455	18	156,182	17	1,754,102
	[1]1890	18	594,478	17	313	18	115,439	18	986,430
Massachusetts	1900	4	15,317,940	2	7,010	2	3,379,698	2	26,067,714
	1890	3	11,646,893	2	7,777	2	4,240,911	2	28,044,815
Michigan	1900	7	5,214,042	9	1,427	10	559,142	9	6,015,590
	1890	13	1,200,982	15	387	15	163,176	13	1,743,760
Minnesota	1900	28	23,060	28	18	28	3,550	29	19,336
	1890	20	482,457	23	104	22	52,942	20	700,217
Mississippi	1900	33	2,460	32	1	34	240	34	3,556
	1890	31	14,220	32	10	32	2,757	31	22,077
Missouri	1900	21	922,083	21	185	20	98,578	23	816,720
	[1]1890	17	691,353	18	310	14	163,687	14	1,511,990
New Hampshire	1900	15	1,900,277	16	552	16	219,292	15	2,664,942
	1890	12	1,303,992	11	668	11	301,077	12	2,988,209
New Jersey	1900	5	9,906,119	5	4,178	5	2,057,197	5	13,747,165
	1890	5	6,314,233	4	3,121	4	1,857,540	5	11,069,467
New York	1900	2	19,062,817	3	6,580	3	2,775,115	3	23,205,991
	[1]1890	2	14,624,047	3	6,280	3	2,957,507	3	23,454,853
North Carolina	1900	19	1,299,798	20	366	19	105,132	19	1,502,378
	1890	26	116,364	22	107	25	24,188	25	190,887
Ohio	1900	6	5,822,580	10	1,384	9	617,409	10	5,182,065
	[1]1890	7	4,380,015	7	1,447	7	708,332	7	6,701,670
Oregon	1900	24	173,144	26	53	26	27,532	26	249,728
	1890	25	128,750	28	30	27	18,196	26	164,193
Pennsylvania	1900	1	57,320,227	1	13,396	1	5,457,518	1	55,615,009
	[1]1890	1	30,165,420	1	10,956	1	5,222,421	1	49,931,716
Rhode Island	1900	26	157,900	24	69	24	32,092	25	292,939
	1890	21	400,784	25	86	24	50,145	24	447,295
South Carolina	1900	32	5,595	29	10	30	2,000	30	18,387
	1890	33	12,093	31	12	31	3,116	32	21,900
Tennessee	1900	14	3,444,197	11	803	13	239,870	14	2,802,117
	1890	16	732,230	12	612	18	186,469	15	1,266,556
Texas	1900	27	24,763	27	29	27	9,216	27	76,508
	1890	27	92,450	27	32	26	20,480	27	90,890
Utah	1900	30	8,625	31	3	31	1,500	32	5,863
	1890	28	50,820	29	23	28	16,030	28	78,789
Vermont	1900	25	160,906	25	68	25	31,225	24	365,099
	1890	24	266,640	21	146	21	64,615	22	592,093
Virginia	1900	13	4,032,387	13	889	12	313,677	11	4,716,920
	1890	14	945,014	14	401	17	121,078	17	1,224,800
Washington	1900	29	17,600	31	3	29	2,125	28	32,605
	[2]1890	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia	1900	9	5,049,615	14	664	15	224,444	13	3,210,753
	1890	19	567,072	20	210	19	88,487	19	896,120
Wisconsin	1900	8	18,283,591	4	5,262	4	2,241,861	4	20,074,378
	1890	4	6,345,812	5	2,487	5	1,271,887	4	11,161,850
All other states	[3]1900	.....	63,351	.....	22	.....	6,963	.....	44,877
	[4]1890	.....	864,292	.....	455	.....	242,667	.....	1,460,119

[1] Exclusive of establishments included in "all other states" in 1890, distributed as follows: Connecticut, 2, 1 leather, morocco, 1 leather, patent and enameled; Delaware, 1, leather, patent and enameled; Illinois, 1, leather, dressed skins; Kentucky, 1, leather, morocco; Maryland, 1, leather, morocco; Missouri, 1, leather, morocco; New York, 1, leather, patent and enameled; Ohio, 4, 2 leather, dressed skins, 1 leather, morocco, and 1 leather, patent and enameled; Pennsylvania, 1 leather, patent and enameled; Texas, 2, leather, dressed skins.

[2] Included in "all other states."

[3] Includes states grouped in order that the operations of individual establishments may not be disclosed. These establishments for 1900 are distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

[4] In 1890, leather, morocco; leather, patent and enameled; leather, tanned and curried; and leather, dressed skins, were treated as separate industries and each given a group of "all other states," embracing those in which there were less than 3 establishments. These groups are combined and the total given for establishments distributed as follows: Leather, morocco—Connecticut, 1; Kentucky, 1; Maryland, 1; Missouri, 1; Ohio, 1; leather, patent and enameled—Connecticut, 1; Delaware, 1; New York, 1; Ohio, 1; Pennsylvania, 1; leather, tanned and curried—Colorado, 1; Iowa, 2; Kansas, 2; Nebraska, 1; South Dakota, 1; Washington, 1; Wyoming, 1; leather, dressed skins—Illinois, 1; Ohio, 2; Texas, 2.

In 1900 Pennsylvania continued its lead of 1890 as to capital, wage-earners, and value of products. This was undoubtedly due largely to the fact that the products of Pennsylvania tanneries were largely sole leather, and that an abundant supply of excellent hemlock bark for tanning was close at hand. In capital, New York held second place, as in 1890, while Massachusetts and Wisconsin have changed places, Wisconsin ranking third and Massachusetts fourth. In wage-earners, wages, and value of products Massachusetts and New York ranked second and third, respectively, in 1900 as in 1890. Alabama, Delaware, Georgia, Michigan, North Carolina, Ohio, Tennessee, Virginia, West Virginia, and some of the other states have increased in production during the decade, while others have dropped down in rank. This decrease is accounted for in part by the closing of tanneries absorbed by the combinations, and in part by scarcity of a desirable quality of bark for tanning. The table shows that the tanning of leather was carried on in 38 states and 1 territory. Arizona, Iowa, Kansas, Nebraska, and South Dakota have fewer than 3 establishments and are included under the head of "all other states."

During the decade there was a general utilization of labor-saving devices for which patents had been issued from time to time. The first of these applying to a "process and apparatus for leaching tanbark" was granted in 1791, and up to 1883, 100 patents had been taken out for a similar purpose. The bark mill was first patented in 1794, and in the class of hides, skins, and leather over 1,400 patents had been issued prior to January 1, 1902. The tanner has now at his command mechanical appliances for carrying the work through the various stages from the beam house to the final measuring of the material, as in the case of upper leather, preparatory to its shipment to the customer. The bark mill, that most important adjunct to the tanner using oak, hemlock, or union tannages, has undergone much improvement of late years. The present saw grinders or cutters overcome defects which were common to bark mills of a few years ago, while the resultant material is so leached that the utmost of its tannin is extracted, which was not formerly the case. In the handling of the hides, the reel, the rocker handler, the skeleton drum, and other labor-saving devices have done their part toward simplifying the work and reducing the cost. The processes subsequent to the removal of the leather from the bath have also been rendered less laborious and less costly by the introduction of mechanical scrubbers, power rollers, scouring and stuffing wheels, stretchers, etc.

Table 10 gives in detail the average number of wage-earners, and the proportion of men, women, and children, by states, 1890 and 1900.

TABLE 10.—AVERAGE NUMBER OF WAGE-EARNERS, AND PROPORTION OF MEN, WOMEN, AND CHILDREN, BY STATES: 1890 AND 1900.

STATES.	Year.	AVERAGE NUMBER OF WAGE-EARNERS.				PER CENT OF TOTAL.		
		Total.	Men, 16 years and over.	Women, 16 years and over.	Children, under 16 years.	Men.	Women.	Children.
United States	1900	52,109	50,402	1,173	534	96.7	2.3	1.0
	1890	42,392	41,733	264	395	98.5	0.6	0.9
Alabama	1900	165	165	.....	.....	100.0	.....	.....
	1890	41	39	1	1	95.2	2.4	2.4
Arkansas	1900	3	3	.....	.....	100.0	.....	.....
	1890	8	8	.....	.....	100.0	.....	.....
California	1900	1,454	1,437	11	6	98.8	0.8	0.4
	1890	1,099	1,095	2	2	99.6	0.2	0.2
Connecticut	1900	179	168	11	.....	93.9	6.1	.....
	[1]1890	103	99	4	.....	96.1	3.9	.....
Delaware	1900	2,457	1,784	583	90	72.6	23.7	3.7
	[1]1890	1,364	1,163	64	137	85.3	4.7	10.0
Georgia	1900	410	408	.....	2	99.5	.....	0.5
	1890	217	215	.....	2	99.1	.....	0.9
Illinois	1900	2,263	2,242	.....	21	99.1	.....	0.9
	1890	1,864	1,859	.....	5	99.7	.....	0.3
Indiana	1900	400	400	.....	.....	100.0	.....	.....
	1890	321	319	.....	2	99.4	.....	0.6
Kentucky	1900	810	810	.....	.....	100.0	.....	.....
	[1]1890	582	579	2	1	99.5	0.3	0.2
Louisiana	1900	4	4	.....	.....	100.0	.....	.....
	1890	17	17	.....	.....	100.0	.....	.....
Maine	1900	587	584	.....	3	99.5	.....	0.5
	1890	852	841	11	.....	98.7	1.3	.....
Maryland	1900	455	442	8	5	97.1	1.8	1.1
	[1]1890	313	306	6	1	97.8	1.9	0.3

[1] See note 1, Table 9.

TABLE 10.—AVERAGE NUMBER OF WAGE-EARNERS, AND PROPORTION OF MEN, WOMEN, AND CHILDREN, BY STATES: 1890 AND 1900—Continued.

STATES.	Year.	AVERAGE NUMBER OF WAGE-EARNERS.				PER CENT OF TOTAL.		
		Total.	Men, 16 years and over.	Women, 16 years and over.	Children, under 16 years.	Men.	Women.	Children.
Massachusetts	1900	7,010	6,955	48	7	99.2	0.7	0.10
	1890	7,777	7,748	27	2	99.6	0.4	(2)
Michigan	1900	1,427	1,425	.....	2	99.9	.....	0.1
	1890	337	336	1	.....	99.7	0.3	.....
Minnesota	1900	18	18	.....	.....	100.0	.....	.....
	1890	104	103	.....	1	99.0	.....	1.0
Mississippi	1900	1	1	.....	.....	100.0	.....	.....
	1890	10	10	.....	.....	100.0	.....	.....
Missouri	1900	185	184	.....	1	99.5	.....	0.5
	[1]1890	310	310	.....	.....	100.0	.....	.....
New Hampshire	1900	552	521	31	.....	94.4	5.6	.....
	1890	668	654	14	.....	97.9	2.1	.....
New Jersey	1900	4,178	4,101	39	38	98.2	0.9	0.9
	1890	3,121	3,081	20	20	98.8	0.6	0.6
New York	1900	6,530	6,397	122	11	97.9	1.9	0.2
	[1]1890	6,280	6,216	41	23	99.0	0.6	0.4
North Carolina	1900	366	366	.....	.....	100.0	.....	.....
	1890	107	104	.....	3	97.2	.....	2.8
Ohio	1900	1,384	1,384	.....	.....	100.0	.....	.....
	[1]1890	1,447	1,441	2	4	99.6	0.1	0.3
Oregon	1900	53	52	1	.....	98.0	2.0	.....
	1890	30	30	.....	.....	100.0	.....	.....
Pennsylvania	1900	13,396	12,839	287	270	95.9	2.1	2.0
	[1]1890	10,956	10,736	39	181	98.0	0.4	1.6
Rhode Island	1900	69	67	2	.....	97.1	2.9	.....
	1890	86	86	.....	.....	100.0	.....	.....
South Carolina	1900	10	10	.....	.....	100.0	.....	.....
	1890	12	12	.....	.....	100.0	.....	.....
Tennessee	1900	803	799	.....	4	99.5	.....	0.5
	1890	612	611	.....	1	99.8	.....	0.2
Texas	1900	29	25	1	3	86.2	3.5	10.3
	[1]1890	32	32	.....	.....	100.0	.....	.....
Utah	1900	3	3	.....	.....	100.0	.....	.....
	1890	23	23	.....	.....	100.0	.....	.....
Vermont	1900	68	68	.....	.....	100.0	.....	.....
	1890	146	146	.....	.....	100.0	.....	.....
Virginia	1900	889	886	.....	3	99.7	.....	0.3
	1890	401	389	3	9	97.0	0.8	2.2
Washington	1900	3	3	.....	.....	100.0	.....	.....
	[3]1890	.....	.....	.....	.....	.....	.....	.....
West Virginia	1900	664	663	.....	1	99.8	.....	0.2
	1890	210	210	.....	.....	100.0	.....	.....
Wisconsin	1900	5,262	5,166	29	67	98.2	0.5	1.3
	1890	2,487	2,461	26	.....	99.0	1.0	.....
All other states[4]	1900	22	22	.....	.....	100.0	.....	.....
	1890	455	454	1	.....	100.0	(2)	.....

[1] See note 1, Table 9. [2] Less than one-tenth of 1 per cent. [3] Included in "all other states." [4] See notes 3 and 4, Table 9.

It follows from the character of the work involved in leather manufacture that there have been few opportunities for any wage-earners except able-bodied men. In 1890 the proportion of men employed to total wage-earners was 98.5 per cent, of women six-tenths of 1 per cent, and of children nine-tenths of 1 per cent. But the census of 1900 showed an increase in the number of women and children entirely out of proportion to the increase in number of men. The average number of men increased only 20.8 per cent, but of women, 344.3 per cent, and of children, 35.2 per cent. The percentage of men to the total was reduced to 96.7. The labor performed by women and children is almost entirely on goatskins. The former are employed in trimming skins, in seasoning and glazing and in attending measuring machines; while the children are made useful in such light work as tacking the skins on stretching boards, etc.

The proof that goat, kid, and morocco manufacture is the one part of the leather industry calling for the employment of women is found in the fact that of the 1,173 employed in the United States, 870 were working in Pennsylvania and Delaware, where the output of goatskins was valued at $24,431,582 out of a total of

$35,672,981 for the United States. The proportion of children employed in tanneries was also larger in Pennsylvania and Delaware than in the other states, 360 of the 534 under 16 years of age reported for the whole country finding employment there.

There were only 21 states in 1900 where either women or children were employed in tanneries as wage-earners, instead of 23 as in 1890; but the fact that 909 more women wage-earners were working in the leather tanneries in 1900 than in 1890 indicates that they are not leaving this field of industrial activity to be developed solely by men.

Table 11 is a summary of miscellaneous expenses, 1900, with the percentage each class is of the total.

TABLE 11.—MISCELLANEOUS EXPENSES, AND PER CENT EACH CLASS IS OF THE TOTAL: 1900.

	Amount.	Per cent of total.
Total	$7,023,416	100.0
Rent of works	270,310	3.8
Taxes, not including internal revenue	593,990	8.5
Rent of offices, insurance, interest, etc.	6,105,720	86.9
Contract work	53,396	0.8

Table 12 gives the number of establishments reporting the different classes of materials and varieties of products, with quantity and value. The statistics given for custom work are also included in the other totals.

TABLE 12.—MATERIALS AND PRODUCTS: CLASSIFIED BY NUMBER OF ESTABLISHMENTS, 1900.

	Number of establishments.	Unit of measure.	Quantities.	Cost of materials.
Materials: Total	.....	.....	.....	$155,000,004
Hides and skins:				
Hides, all kinds	886	Number	15,838,862	77,784,760
Calf and kip skins	372	Number	8,944,454	10,792,485
Goatskins	188	Number	48,046,897	24,950,223
Sheepskins	360	Number	24,507,642	8,457,995
All other skins	127	Number	2,371,488	1,560,506
Tanning materials:				
Hemlock bark	401	Cords	1,170,131	7,347,242
Oak bark	607	Cords	445,934	3,174,995
Gambier	241	Bales	128,425	890,066
Hemlock-bark extract	112	Barrels	12,812	150,914
Oak-bark extract	146	Barrels	54,231	550,065
Quebracho	105	Barrels or bales.	20,360	292,133
Sumac	194	Tons	8,531	434,447
Chemicals	421	.....	.....	2,257,751
All other materials used for tanning.	565	.....	.....	1,919,884
Currying materials:				
Rough leather, purchased rough.	95	Sides	1,086,592	3,534,097
Rough grains, purchased rough	17	Sides	165,938	467,125
Rough splits, purchased rough.	35	Sides	1,721,187	1,320,589
All other rough leather, purchased rough.	25	Sides	1,435,732	1,341,584
Oil, stearin, degras, tallow, and all other materials used in currying.	1,000	.....	.....	3,790,672
Fuel	1,000	.....	.....	1,130,608
Rent of power and heat	44	.....	.....	30,064
Mill supplies	1,001	.....	.....	318,547
All other materials	392	.....	.....	815,693
Freight	642	.....	.....	1,687,609

TABLE 12.—MATERIALS AND PRODUCTS: CLASSIFIED BY NUMBER OF ESTABLISHMENTS, 1900—Continued.

	Number of establishments.	Unit of measure.	Quantities.	Value of products, including custom work.
Products: Total	.....	.....	.....	$204,038,127
Rough leather, sold in the rough	187	Sides	1,242,173	3,900,284
Rough grains, sold in the rough	16	Sides	322,147	806,422
Rough splits, sold in the rough	88	Sides	2,510,347	1,801,452
All other rough leather, sold in the rough.	44	Sides	154,967	356,187
Sole leather:				
Oak	127	Sides	2,562,814	13,359,836
Union	39	Sides	3,096,162	12,807,262
Hemlock	99	Sides	9,810,996	29,305,561
Chrome, sole leather	2	Sides	2,100	8,966
Upper leather (other than calf or kip skins):				
Grain, satin, kangaroo, etc., (side leather).	233	Sides	8,141,093	17,478,802
Finished splits	99	Number	8,790,382	6,740,502
Patent and enameled shoe leather.	22	Sides	236,943	1,092,534
Horsehide	53	Sides	446,756	843,118
Calf and kip skins, tanned and finished:				
Flesh finished	250	Number	1,151,413	2,491,711
Grain finished	118	Number	7,112,859	12,127,439
Patent and enameled	8	Number	591,711	1,074,446
Goatskins, tanned and finished, black.	155	Number	38,176,816	29,050,886
Goatskins, tanned and finished, colored.	42	Number	8,867,116	6,622,095
Sheepskins, tanned and finished.	308	Number	20,290,985	8,353,755
Belting leather	62	Sides	1,472,016	7,092,778
Harness leather	462	Sides	3,444,616	16,712,056
Carriage leather	40	Hides	518,805	4,829,388
Trunk, bag, and pocketbook leather.	74	.....	.....	2,611,326
Bookbinders' leather	33	.....	.....	1,688,418
Leather for manufacture of gloves.	67	.....	.....	3,084,837
Furniture leather	26	Hides	100,936	918,999
All other leather	354	.....	.....	9,043,008
All other products, including by-products, offal, etc.	456	.....	.....	5,514,395
Amount charged for tanning and currying for others.	313	.....	.....	4,321,669

	Number of establishments.	Estimated value in condition received.	Estimated value after being tanned or curried.
Custom work: Total	.....	$14,469,194	$19,249,391
Hides tanned	170	3,232,043	4,538,715
Skins tanned	160	9,133,128	12,343,166
Sides curried	32	1,082,921	1,134,083
Splits curried	7	342,958	442,852
Skins curried	21	678,144	790,575

In estimating the cost of tanning, it is well to bear in mind the different conditions under which the manufacture is conducted in the various states. Some tanners, for instance, are apt to give more time to certain departments than to others, thus increasing or diminishing, as the case may be, the cost of carrying the material through all the processes. Moreover, the cost of bark is governed to some extent by the location of the tannery. Twenty-five years ago it was considered that a ton of 2,240 pounds of average hemlock bark should tan 200 pounds of sole leather, or 300 to 400 pounds of upper leather, all the conditions being favorable. With dry hides, under similar conditions, the gain would be about 60 per cent. Under the present system this quantity of bark will tan about 300 pounds of sole leather or about 400 pounds of upper leather.

The average amount paid for fuel, $1,130 per year, was very small as compared with the outlay of other establishments using the same amount of steam, or operating machinery calling for approximating amounts of power. This is accounted for by the use of spent bark for fuel in many tanneries. Years ago it was used in the furnaces just as it came from the leaches, but now the moisture is eliminated, so that it reaches the fire box as dry as ordinary fuel.

The early tanners were conservative in adopting new processes. Various tannages and substitutes for oak and hemlock bark, which furnished all the tannin of former years, have come into wide use. Standard tannages are now made from hemlock and oak barks, from their extracts, from gambier, sumac, and quebracho, and from chemicals. Mechanical devices have shortened the time required for getting good results, but the tanner is constantly on the alert to secure something that will diminish the number of weeks he is compelled to wait while his hides are assimilating the liquors in which they are placed. Some such shortening process as that employed in the manufacture of kid or morocco is confidently anticipated by manufacturers of sole leather, calf, upper, etc. In the case of kid, hyposulphite of sodium added to the chromium compounds makes the tannage more permanent, while the desired results are obtained in a shorter time. To this discovery is due the sudden growth of a most important branch of leather manufacturing.

Notwithstanding the numberless inventions that have to do with the chemical side of tanning, hemlock and oak bark still furnish the great bulk of the material upon which the manufacturers of leather rely for their tannin. This is accounted for by the practically unlimited supply and the satisfactory results obtained through their use. Inventive genius has exhausted almost every expedient for getting the last particle of tanning material from the bark, so that, whereas not long ago a large percentage of tannin was lost to the manufacturer, he is now able to utilize practically all that the bark is capable of yielding.

Leather, as shown in Table 13, is made from a variety of hides and skins obtained both from the domestic animals and from those in other countries. Hides, in the commonly accepted meaning of the term, are obtained from large animals, such as oxen, cows, and horses; kips from small or yearling cattle; and skins from calves, sheep, goats, deer, pigs, etc. From heavy hides are made sole, harness, and belting leathers; from calf skins, upper leather for boots and shoes, bookbinding, etc. Shoe linings, some of the cheaper grades of women's shoes, bellows, cushions, and various other articles are made from sheepskins, while gloves and many of the better class of women's shoes are made from goat and kid skins. Glazed kid has superseded the morocco of former days. Hogskins are used largely by the saddle makers and for the manufacture of traveling bags.

Up to 1815 the domestic supply of hides and skins was sufficient to meet the demands of the tanners, but from that date there has been an increase in the number brought from other countries. According to the Statistical Abstract of the United States Treasury Department, the imports of hides and skins for 1900 were 163,865,165 pounds, valued at $19,408,217; in 1899[1] they were 130,396,020 pounds, valued at $13,621,946; and in 1898[1] they were 126,243,595 pounds, valued at $13,624,989. The quantity thus obtained, together with that supplied by cattle and small animals of the United States, represented in 1900 an output by the various tanneries valued at $204,038,127. The largest product was goatskins, black and colored, which showed an aggregate of 47,043,932, valued at $35,672,981. Sole leather follows with 15,472,072 sides, valued at $55,481,625. There were 3,444,616 sides of harness leather, valued at $16,712,056, and 1,472,016 sides of belting leather, valued at $7,092,778. Of the upper leathers, "grain, satin, kangaroo, etc. (side leather)," shows by far the largest quantity, the figures for this class being 8,141,093 sides, valued at $17,478,802. Grain leather made up the largest part of this last total. This latter is, in brief, leather that has been made from the hides of neat cattle, split so thin by the splitting machine as to be suitable for the same uses as are goat, calf, and various other skins which it is made to imitate.

The number of finished splits was 8,790,382, valued at $6,740,502, while the total value of all upper leather was $26,154,956.

Table 13 shows, by states, the number of establishments producing different kinds of leather in 1900.

The superior quality of the product of the tanneries of the United States is recognized in the large demand for American leather abroad, the exports of the principal kinds for 1900 being valued at $21,797,157.

[1] These figures are for hides of cattle only.

TABLE 13.--NUMBER OF ESTABLISHMENTS PRODUCING DIFFERENT CLASSES OF LEATHER: BY STATES, 1900.

STATES.	Total.	Sole.	Rough.	Upper.	Goat, kid, and morocco.	Patent and enameled.	FINISHED LEATHER.				All other.
							Sheepskin.	Belting.	Harness and carriage.	Trunk, glove, bookbinding, and furniture.	
United States	1,306	166	133	137	180	12	55	30	330	77	236
Alabama	18	3	4	3					4		4
Arizona	1			1							
Arkansas	3			2					1		
California	45	8	3	3	2				17	5	7
Connecticut	7							3	1	1	2
Delaware	20		1		14	1	1	1			2
Georgia	36	1	12	5	2				13		3
Illinois	27	2		4	6		2	1	2	4	6
Indiana	23		1					1	17		4
Iowa	2						1			1	
Kansas	1										1
Kentucky	23	9	1				1		9		3
Louisiana	3			1					1		1
Maine	31	8	1	1	1		7		1		12
Maryland	22	2	1		8		1	1	11	1	2
Massachusetts	119	1	2	21	31	1	13	4	2	4	40
Michigan	27	9	2	4			1		5		6
Minnesota	9	1	1						3	1	3
Mississippi	4			3					1		
Missouri	9							2	4		3
Nebraska	2										2
New Hampshire	12			3	2		3	3			1
New Jersey	77		4	4	10	9	3		14	16	17
New York	147	19	17	15	8		7	2	5	32	42
North Carolina	75	1	5	24	5			4	25	1	10
Ohio	58	2	1	1	2	1	2	1	41		7
Oregon	16	1	1						4	2	8
Pennsylvania	254	72	45	10	31		8	1	63	5	19
Rhode Island	5						3				2
South Carolina	5		1	1					3		
South Dakota	2								2		
Tennessee	44	2	4	6	1			1	25		5
Texas	11	2		1					4		4
Utah	4	2		1					1		
Vermont	8		6	1					1		
Virginia	65	7	13	7	2		1	4	20		11
Washington	3			1	1					1	
West Virginia	46	6	5	10	1			1	22		1
Wisconsin	42	8	2	4	8		1		8	3	8

Table 14 shows these exports from 1891 to 1900, inclusive.

TABLE 14.—EXPORTS OF THE PRINCIPAL KINDS OF LEATHER, 1891 TO 1900, INCLUSIVE.[1]

Year.	Total.	Sole.	Kid (glazed).	Patent or enameled.	Splits, buffs, grain, and all other upper.	All other leather.
1900	$21,797,157	$6,433,303	$1,909,914	$101,708	$11,913,256	$1,438,976
1899	19,725,473	6,280,904	694,265	82,908	11,576,822	1,090,574
1898	17,796,404	6,644,558	249,990	93,847	9,949,593	858,421
1897	16,431,255	6,510,404	(2)	313,151	8,793,902	813,798
1896	17,764,985	7,474,021	(2)	369,452	8,903,863	1,017,649
1895	13,640,553	6,919,372	(2)	285,662	5,753,278	682,241
1894	12,778,945	6,481,257	(2)	249,127	5,221,205	827,356
1893	10,695,284	5,192,063	(2)	246,288	4,440,524	817,409
1892	10,518,363	5,783,555	(2)	249,239	3,880,475	605,094
1891	12,023,445	6,168,362	(2)	364,770	5,161,211	329,102

[1] Statistical Abstract of the United States Treasury Department, 1900.
[2] Not separately enumerated.

While it has been the policy of the Government from the first to protect leather and its manufactures by a tariff, hides have been admitted free the greater part of the time. The first tariff applied to hides was in 1842, when a duty of 5 per cent was placed on them. This was reduced to 4 per cent in 1857, and raised again in March, 1861. In December, 1861, it was made 10 per cent, at which figure it remained until 1873. In the tariff bill enacted that year hides and skins were made free, remaining so until the enactment of the Dingley bill in 1897, when a duty of 15 per cent was imposed, which is now in force.

Table 15 shows the date of organization of the five industrial combinations in the manufacture of leather, tanned, curried, and finished, with number of plants controlled, capitalization, and dividends, 1900.

TABLE 15.—INDUSTRIAL COMBINATIONS IN THE MANUFACTURE OF LEATHER, TANNED, CURRIED, AND FINISHED: NUMBER OF PLANTS CONTROLLED, CAPITAL, AND DIVIDENDS, 1900.

NAME OF COMBINATION.	Location of central office.	Date of organization.	Number of plants controlled.	CAPITALIZATION. Amount authorized by charter.			
				Bonds.	Stock.		
					Total.	Preferred.	Common.
Total			[1] 108	$20,000,000	$199,000,000	$81,500,000	$117,500,000
American Hide and Leather Co	92 Cliff street, New York city	Aug. 29, 1899	30	10,000,000	35,000,000	17,500,000	17,500,000
Elk Tanning Co	Ridgway, Pa	Apr. 17, 1893	23		12,500,000		12,500,000
Penn Tanning Co	Sheffield, Pa	Apr. 13, 1893	14		13,500,000		13,500,000
Union Tanning Co	Williamsport, Pa	Apr. 17, 1893	18		10,000,000		10,000,000
United States Leather Co	26 Ferry street, New York city	Feb. 25, 1893	23	10,000,000	128,000,000	64,000,000	64,000,000

NAME OF COMBINATION.	Location of central office.	Date of organization.	Number of plants controlled.	CAPITALIZATION. Amount issued.			
				Bonds.	Stock.		
					Total.	Preferred.	Common.
Total			[1] 108	$13,805,000	$184,015,200	$75,282,300	$108,732,900
American Hide and Leather Co	92 Cliff street, New York city	Aug. 29, 1899	30	8,525,000	24,500,000	13,000,000	11,500,000
Elk Tanning Co	Ridgway, Pa	Apr. 17, 1893	23		12,319,900		12,319,900
Penn Tanning Co	Sheffield, Pa	Apr. 13, 1893	14		13,380,900		13,380,900
Union Tanning Co	Williamsport, Pa	Apr. 17, 1893	18		8,649,800		8,649,800
United States Leather Co	26 Ferry street, New York city	Feb. 25, 1893	23	5,280,000	125,164,600	62,282,300	62,882,300

NAME OF COMBINATION.	Location of central office.	Date of organization.	Number of plants controlled.	DIVIDENDS PAID DURING CENSUS YEAR.				
				Rate.		Total.	On preferred stock.	On common stock.
				On preferred.	On common.			
Total			[1] 108					
American Hide and Leather Co	92 Cliff street, New York city	Aug. 29, 1899	30	None	None			
Elk Tanning Co	Ridgway, Pa	Apr. 17, 1893	23		$1.50 per share	$184,799		$184,799
Penn Tanning Co	Sheffield, Pa	Apr. 13, 1893	14		None			
Union Tanning Co	Williamsport, Pa	Apr. 17, 1893	18		$1.50 per share	129,747		129,747
United States Leather Co	26 Ferry street, New York city	Feb. 25, 1893	23	6 per cent.	None	3,736,376	$3,736,376	

[1] Includes 9 idle establishments.

Table 16 is a summary of the manufacturing statistics for these combinations, 1900.

TABLE 16.—SUMMARY OF 5 INDUSTRIAL COMBINATIONS ENGAGED IN THE MANUFACTURE OF LEATHER, TANNED, CURRIED, AND FINISHED: 1900.

Number of establishments[1]	99
Capital	$62,355,446
Salaried officials, clerks, etc., number	334
Salaries	$655,776
Wage-earners, average number	9,736
Wages	$4,000,861
Miscellaneous expenses	$1,542,840
Cost of materials used	$35,352,475
Value of products	$45,484,592

[1] Distributed as follows: Georgia, 1; Illinois, 4; Kentucky, 1; Maine, 1; Maryland, 1; Massachusetts, 9; Michigan, 1; New York, 17; Pennsylvania, 58; Tennessee, 2; West Virginia, 4; Wisconsin, 5.

Table 17 is a detailed summary, by states, for leather, tanned, curried, and finished, 1900.

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900.

	United States.	Alabama.	Arkansas.	California.	Connecticut.	Delaware.	Georgia.	Illinois.	Indiana.
Number of establishments	1,306	18	3	45	7	20	36	27	23
Character of organization:									
Individual	637	16	3	17	2	6	27	9	14
Firm and limited partnership	360	1	.....	15	3	9	5	6	6
Incorporated company	309	1	.....	13	2	5	4	12	3
Capital:									
Total	$173,977,421	$464,005	$2,190	$4,820,205	$639,408	$5,178,804	$1,434,390	$4,751,474	$1,321,455
Land	$14,179,485	$7,955	$80	$303,350	$65,500	$166,669	$56,270	$208,918	$54,013
Buildings	$20,785,412	$38,935	$425	$577,115	$97,209	$501,796	$210,520	$374,062	$152,950
Machinery, tools, and implements	$15,022,239	$149,575	$1,060	$427,860	$59,342	$572,248	$265,820	$451,605	$98,122
Cash and sundries	$123,990,285	$267,540	$625	$3,511,880	$417,357	$3,938,091	$901,780	$3,716,889	$1,016,370
Proprietors and firm members	1,473	19	3	48	10	30	33	24	27
Salaried officials, clerks, etc.:									
Total number	2,442	8	.....	75	12	156	26	86	27
Salaries	$3,158,842	$7,200	.....	$106,458	$13,506	$166,139	$20,413	$176,646	$26,872
Officers of corporations—									
Number	354	.....	.....	27	4	18	2	9	7
Salaries	$957,128	.....	.....	$58,375	$4,820	$51,580	$3,170	$58,100	$6,150
General superintendents, managers, clerks, etc.—									
Total number	2,088	8	.....	48	8	138	24	77	20
Salaries	$2,201,714	$7,200	.....	$48,088	$8,686	$114,559	$17,243	$123,546	$20,722
Men—									
Number	1,942	8	.....	46	8	129	24	73	18
Salaries	$2,136,723	$7,200	.....	$47,188	$8,686	$110,646	$17,243	$122,614	$19,660
Women—									
Number	146	.....	.....	2	.....	9	.....	4	2
Salaries	$64,991	.....	.....	$900	.....	$3,913	.....	$932	$1,062
Wage-earners, including pieceworkers, and total wages:									
Greatest number employed at any one time during the year	62,578	182	4	1,646	200	3,204	523	2,478	422
Least number employed at any one time during the year	44,365	178	4	1,311	156	1,926	346	2,088	360
Average number	52,109	165	3	1,454	179	2,457	410	2,263	400
Wages	$22,591,091	$71,440	$750	$870,978	$90,058	$1,044,903	$92,030	$1,145,170	$181,942
Men, 16 years and over—									
Average number	50,402	165	3	1,437	168	1,784	408	2,242	400
Wages	$22,140,284	$71,440	$750	$864,719	$87,158	$861,094	$91,980	$1,141,259	$181,942
Women, 16 years and over—									
Average number	1,173	.....	.....	11	11	583	.....	.....	.....
Wages	$339,167	.....	.....	$4,044	$2,900	$165,865	.....	.....	.....
Children, under 16 years—									
Average number	534	.....	.....	6	.....	90	2	21	.....
Wages	$111,690	.....	.....	$2,210	.....	$17,944	$50	$3,911	.....
Average number of wage-earners, including pieceworkers, employed during each month:									
Men, 16 years and over—									
January	48,882	162	3	1,419	179	1,662	393	2,228	412
February	49,374	161	3	1,415	176	1,514	396	2,228	406
March	50,303	161	3	1,432	175	1,990	408	2,260	412
April	50,174	161	3	1,413	177	1,997	416	2,263	404
May	50,631	178	4	1,427	174	1,986	457	2,225	389
June	49,467	178	4	1,383	170	1,917	422	2,167	381
July	49,701	161	3	1,417	174	1,646	430	2,231	395
August	50,593	161	3	1,469	164	1,708	386	2,197	414
September	51,672	162	3	1,485	158	1,950	398	2,271	388
October	51,501	165	3	1,486	156	1,700	386	2,245	407
November	51,360	164	3	1,452	159	1,636	391	2,294	410
December	51,166	164	3	1,452	162	1,749	408	2,291	382
Women, 16 years and over—									
January	1,191	.....	.....	12	11	568	.....	.....	.....
February	1,059	.....	.....	12	11	443	.....	.....	.....
March	1,284	.....	.....	12	11	696	.....	.....	.....
April	1,260	.....	.....	12	11	695	.....	.....	.....
May	1,174	.....	.....	12	11	621	.....	.....	.....
June	1,172	.....	.....	10	11	615	.....	.....	.....
July	1,061	.....	.....	10	11	508	.....	.....	.....
August	1,161	.....	.....	10	11	576	.....	.....	.....
September	1,242	.....	.....	10	11	631	.....	.....	.....
October	1,145	.....	.....	11	11	550	.....	.....	.....
November	1,137	.....	.....	10	11	535	.....	.....	.....
December	1,195	.....	.....	11	11	562	.....	.....	.....
Children, under 16 years—									
January	520	.....	.....	6	.....	78	1	16	.....
February	515	.....	.....	6	.....	82	1	15	.....
March	531	.....	.....	6	.....	114	3	16	.....
April	526	.....	.....	6	.....	113	5	16	.....
May	510	.....	.....	7	.....	104	2	20	.....
June	515	.....	.....	6	.....	100	2	23	.....
July	539	.....	.....	6	.....	73	2	24	.....
August	569	.....	.....	6	.....	86	2	25	.....
September	576	.....	.....	6	.....	107	1	25	.....
October	536	.....	.....	6	.....	74	1	26	.....
November	527	.....	.....	6	.....	66	1	26	.....
December	544	.....	.....	6	.....	82	1	22	.....
Miscellaneous expenses:									
Total	$7,023,416	$44,107	$37	$180,795	$23,087	$226,083	$24,724	$181,350	$61,747
Rent of works	$270,310	.....	$10	$5,073	$1,000	$13,549	$1,620	$21,090	$2,166
Taxes, not including internal revenue	$593,990	$1,865	$13	$17,492	$2,837	$14,132	$3,989	$23,377	$5,460
Rent of offices, insurance, interest, and all sundry expenses not hitherto included	$6,105,720	$42,167	$14	$157,630	$19,250	$198,402	$19,115	$136,883	$54,121
Contract work	$53,396	$75	.....	.....	.....	.....	.....	.....	.....
Materials used:									
Total cost	$155,000,004	$672,017	$3,590	$5,809,428	$681,399	$7,027,715	$928,129	$5,784,474	$1,187,397
Hides and skins—									
Hides (all kinds), number	15,838,862	115,015	1,175	585,186	52,073	14,842	143,757	748,978	174,910
Cost	$77,784,760	$562,732	$2,575	$3,207,562	$396,000	$102,044	$692,636	$2,294,141	$850,755
Calf and kip skins, number	8,944,454	963	150	122,167	.....	.....	35,062	1,478,882	16,507
Cost	$10,792,485	$932	$60	$138,507	.....	.....	$38,136	$2,073,564	$26,303
Goatskins, number	48,046,897	1,033	100	27,052	.....	9,363,769	2,600	66	.....
Cost	$24,950,223	$464	$25	$12,000	.....	$6,010,737	$1,380	$10	.....
Sheepskins, number	24,507,642	425	150	1,381,579	297,182	175,272	33,662	1,263,323	11,145
Cost	$8,457,995	$92	$25	$890,014	$120,145	$47,315	$15,193	$556,964	$9,356
All other skins, number	2,371,488	1,865	300	196,319	.....	.....	463	33,700	31,711
Cost	$1,560,506	$575	$150	$147,280	.....	.....	$568	$11,775	$10,677

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	United States.	Alabama.	Arkansas.	California.	Connecticut.	Delaware.	Georgia.	Illinois.	Indiana.
Materials used—Continued.									
Total cost—Continued.									
Tanning materials—									
Hemlock bark, cords	1,170,131	46	.....	.....	495	1,316	85	18,312	700
Cost	$7,347,242	$178	.....	.....	$3,810	$18,800	$415	$141,176	$5,701
Oak bark, cords	445,934	18,561	70	36,123	133	300	23,217	.....	6,874
Cost	$3,174,995	$62,628	$330	$582,421	$1,041	$3,500	$87,116	.....	$55,439
Gambier, bales	128,425	.....	4	3,704	205	165	10	22,846	237
Cost	$890,066	.....	$35	$35,776	$1,445	$1,192	$40	$172,615	$1,825
Hemlock bark extract, barrels	12,812	.....	.....	173	820	.....	170	179	606
Cost	$150,914	.....	.....	$2,600	$8,480	.....	$2,294	$2,122	$7,646
Oak bark extract, barrels	54,281	5	5	1,264	2,696	40	664	19	4,501
Cost	$550,065	$20	$10	$18,654	$29,429	$804	$6,639	$289	$33,542
Quebracho, barrels or bales	20,360	.....	.....	300	494	5	950	468	510
Cost	$292,133	.....	.....	$4,500	$5,466	$74	$16,800	$8,768	$8,209
Sumac, tons	8,531	.....	1	146	111	20	11	307	27
Cost	$434,447	.....	$85	$11,662	$4,770	$1,260	$464	$14,152	$1,581
Chemicals	$2,257,751	$5	$25	$59,238	$1,791	$243,703	$6,265	$47,137	$356
All other materials used in tanning	$1,919,834	$21,084	$25	$19,542	$200	$204,351	$2,341	$94,686	$8,320
Currying materials—									
Purchased rough, sides	4,409,449	200	.....	100,513	20,542	15,400	1,000	1,203	24,675
Cost	$6,663,395	$400	.....	$434,214	$73,562	$91,282	$600	$7,253	$86,859
Rough leather, sides	1,086,592	200	.....	99,993	5,948	1,612	.....	1,203	24,675
Cost	$3,534,097	$400	.....	$432,654	$16,869	$6,293	.....	$7,253	$86,859
Rough grains, sides	165,938	.....	.....	.....	100	.....	.....	.....	.....
Cost	$467,125	.....	.....	.....	$315	.....	.....	.....	.....
Rough splits, sides	1,721,187	.....	.....	520	1,000	.....	1,000	.....	.....
Cost	$1,320,589	.....	.....	$1,560	$1,800	.....	$600	.....	.....
All other rough leather, sides	1,435,732	.....	.....	.....	13,494	13,788	.....	.....	.....
Cost	$1,341,584	.....	.....	.....	$54,578	$84,989	.....	.....	.....
Oil, stearin, degras, tallow, and all other materials used in currying	$3,790,672	$508	$175	$127,508	$14,174	$104,996	$16,025	$191,794	$52,683
Fuel	$1,180,608	$13,058	$100	$33,376	$6,674	$38,747	$3,261	$73,786	$10,149
Rent of power and heat	330,064	.....	.....	$2,180	.....	.....	.....	.....	.....
Mill supplies	$318,547	$9,036	$20	$17,092	$1,527	$26,864	$3,562	$11,093	$1,652
All other materials	$815,693	$290	.....	$21,030	$2,800	$78,033	$4,760	$66,142	$1,085
Freight	$1,687,609	$65	.....	$44,272	$10,085	$55,073	$29,634	$17,082	$5,169
Products:									
Total value	$204,038,127	$1,005,358	$5,859	$7,405,981	$891,478	$9,400,504	$1,187,697	$7,847,885	$1,589,802
Sold in the rough, sides	4,229,634	3,040	.....	130,595	20,392	27,496	71,502	150,976	31,000
Value	$6,864,345	$7,818	.....	$309,405	$24,470	$56,066	$161,091	$74,470	$15,250
Rough leather, sides	1,242,173	2,800	.....	59,205	.....	6,000	64,684	.....	.....
Value	$3,900,284	$7,688	.....	$242,100	.....	$21,000	$148,065	.....	.....
Rough grains, sides	322,147	.....	.....	.....	8,000	.....	.....	.....	.....
Value	$806,422	.....	.....	.....	$20,600	.....	.....	.....	.....
Rough splits, sides	2,610,347	.....	.....	59,640	12,392	21,496	5,116	150,976	21,000
Value	$1,801,452	.....	.....	$11,005	$3,870	$35,066	$8,232	$74,470	$12,250
All other rough leather, sides	154,967	240	.....	11,750	.....	.....	1,702	.....	10,000
Value	$356,187	$185	.....	$56,300	.....	.....	$4,794	.....	$3,000
Sole leather, sides	15,472,072	218,790	.....	556,063	.....	.....	57,952	68,824	.....
Value	$55,481,625	$974,000	.....	$2,532,988	.....	.....	$300,985	$310,296	.....
Oak, sides	2,562,814	218,550	.....	556,063	.....	.....	57,952	.....	.....
Value	$13,359,836	$973,250	.....	$2,532,988	.....	.....	$300,985	.....	.....
Union, sides	3,096,162	.....	.....	.....	.....	.....	.....	.....	.....
Value	$12,807,262	.....	.....	.....	.....	.....	.....	.....	.....
Hemlock, sides	9,810,996	240	.....	.....	.....	.....	.....	68,824	.....
Value	$29,305,561	$750	.....	.....	.....	.....	.....	$310,296	.....
Chrome, sides	2,100	.....	.....	.....	.....	.....	.....	.....	.....
Value	$8,966	.....	.....	.....	.....	.....	.....	.....	.....
Upper leather, other than calf or kip skins	$26,154,956	$1,960	$830	$150,473	$8,340	$132,000	$67,235	$2,191,221	$955
Grain, satin, kangaroo, etc., side leather, sides	8,141,093	850	350	60,603	.....	.....	25,925	932,186	144
Value	$17,478,802	$1,650	$800	$139,572	.....	.....	$37,735	$1,318,546	$425
Finished splits, number	8,790,382	200	150	7,520	1,000	.....	37,482	974,992	144
Value	$6,740,502	$310	$30	$10,901	$2,340	.....	$29,500	$487,675	$130
Patent and enameled shoe leather, sides	236,943	.....	.....	.....	800	21,496	.....	.....	.....
Value	$1,092,534	.....	.....	.....	$6,000	$132,000	.....	.....	.....
Horsehide, sides	446,756	.....	.....	.....	.....	.....	.....	200,000	36
Value	$843,118	.....	.....	.....	.....	.....	.....	$385,000	$100
Calf and kip skins, tanned and finished, number	8,855,983	863	150	122,152	.....	.....	35,262	1,455,154	16,507
Value	$15,693,596	$1,536	$120	$195,124	.....	.....	$67,877	$3,034,367	$42,805
Flesh finished, number	1,151,413	663	150	85,000	.....	.....	7,487	302,579	13,782
Value	$2,491,711	$1,296	$120	$141,529	.....	.....	$12,302	$876,688	$34,790
Grain finished, number	7,112,359	200	.....	37,152	.....	.....	27,775	1,152,575	2,725
Value	$12,127,439	$240	.....	$53,595	.....	.....	$55,575	$2,157,679	$3,075
Patent and enameled, number	591,711	.....	.....	.....	.....	.....	.....	.....	.....
Value	$1,074,446	.....	.....	.....	.....	.....	.....	.....	.....
Goatskins, tanned and finished, number	47,043,932	1,013	100	6,400	.....	9,363,769	2,590	.....	.....
Value	$35,672,981	$864	$60	$6,040	.....	$8,684,800	$2,323	.....	.....
Black, number	38,176,816	750	100	.....	.....	7,803,193	2,115	.....	.....
Value	$29,050,886	$711	$60	.....	.....	$7,104,736	$1,878	.....	.....
Colored, number	8,867,116	263	.....	6,400	.....	1,560,576	475	.....	.....
Value	$6,622,095	$153	.....	$6,040	.....	$1,530,064	$445	.....	.....
Finished leather	$45,291,552	$9,255	$4,545	$2,833,762	$558,935	$189,501	$496,634	$949,858	$1,239,728
Sheepskins, tanned and finished, number	20,290,985	425	150	1,135,250	.....	175,272	31,150	1,263,323	10,335
Value	$8,353,755	$225	$45	$318,900	.....	$61,921	$10,312	$540,193	$5,606
Belting leather, sides	1,472,016	.....	.....	.....	57,240	17,588	61,505	6,400	43,939
Value	$7,092,778	.....	.....	.....	$404,223	$127,580	$260,190	$33,080	$188,599
Harness leather, sides	3,414,616	2,650	2,000	379,323	1,201	.....	56,200	84,303	193,777
Value	$16,712,056	$9,030	$4,500	$1,976,755	$5,142	.....	$226,132	$170,000	$1,011,613
Carriage leather, hides	518,805	.....	.....	175	10,000	.....	.....	250	.....
Value	$4,829,388	.....	.....	$1,200	$69,000	.....	.....	$625	.....
Trunk, bag, and pocketbook leather	$2,611,326	.....	.....	$11,400	$40,285	.....	.....	$20,510	$33,586
Bookbinders' leather	$1,688,413	.....	.....	.....	$40,285	.....	.....	.....	.....
Leather for manufacture of gloves	$3,084,837	.....	.....	$525,507	.....	.....	.....	$185,450	$324
Furniture leather, hides	100,936	.....	.....	.....	.....	.....	.....	.....	.....
Value	$918,999	.....	.....	.....	.....	.....	.....	.....	.....
All other leather	$9,043,008	$8,275	$250	$531,690	$289,391	$5,609	$26,975	$769,264	$253,056
All other products, including by-products, offal, etc	$5,514,395	$1,535	$24	$843,710	$9,965	$201,840	$24,220	$489,859	$36,098
Amount charged for tanning or currying for others	$4,321,669	$115	$30	$2,789	$377	$180,688	$40,357	$28,500	$2,150

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	United States.	Alabama.	Arkansas.	California.	Connecticut.	Delaware.	Georgia.	Illinois.	Indiana.
Custom work, stock tanned or finished for others:									
Estimated value in condition received	$14,469,194	$162	$40	$9,075	$3,600	$429,424	$150,001	$87,625	$2,820
Estimated value after being tanned or curried	$19,249,391	$309	$75	$13,012	$4,180	$638,112	$191,717	$125,275	$5,220
Tanned—									
Hides, number	713,350	47	10	189			19,380	250	5,075
Estimated value in condition received	$3,232,043	$63	$40	$600			$149,566	$375	$1,700
Estimated value after being tanned or curried	$4,638,715	$111	$75	$1,187			$191,057	$625	$3,400
Skins, number	20,843,315	155		250	20	935,969	250	178,600	2,800
Estimated value in condition received	$9,133,128	$83		$250	$15	$429,424	$435	$87,250	$1,120
Estimated value after being tanned or curried	$12,343,166	$166		$500	$40	$638,112	$660	$124,650	$1,820
Curried—									
Sides, number	918,549	12		1,878					
Estimated value in condition received	$1,082,921	$16		$8,100					
Estimated value after being tanned or curried	$1,134,083	$32		$11,125					
Splits, number	331,506								
Estimated value in condition received	$342,958								
Estimated value after being tanned or curried	$442,852								
Skins, number	1,322,544			25					
Estimated value in condition received	$678,144			$125	$3,585				
Estimated value after being tanned or curried	$790,575			$200	$4,140				
Comparison of products:									
Number of establishments reporting for both years	1,178	16	3	40	7	18	32	19	23
Value for census year	$183,660,684	$1,000,898	$5,859	$7,335,521	$891,478	$9,165,294	$1,146,841	$4,644,518	$1,589,802
Value for preceding business year	$165,421,989	$920,505	$5,050	$6,790,080	$775,733	$8,128,422	$700,850	$3,906,591	$1,348,328
Power:									
Number of establishments reporting	991	3	1	44	7	20	20	24	17
Total horsepower	91,917	662	12	2,392	215	3,755	673	3,305	648
Owned—									
Engines—									
Steam, number	1,507	8	1	53	5	27	19	49	20
Horsepower	84,229	656	12	2,125	120	3,640	638	3,305	620
Gas and gasoline, number	25				1		1		1
Horsepower	866				15		4		8
Water wheels, number	109	1			3		4		
Horsepower	2,231	6			80		31		
Electric motors, number	206			11		5			2
Horsepower	3,057			240		115			20
Other power, number	1								
Horsepower	3								
Rented—									
Electric, horsepower	863			22					
Other kind, horsepower	668			5					
Furnished to other establishments, horsepower	298			5		30	10	92	
Establishments classified by number of persons employed not including proprietors or firm members:									
Total number of establishments	1,306	18	3	45	7	20	36	27	23
No employees	186	8	1	2			7	2	5
Under 5	313	8	2	6	1	1	15	1	8
5 to 20	231	1		14	1	1	8	5	4
21 to 50	235			13	4	5	4	6	5
51 to 100	164			5	1	5		5	
101 to 250	131	1		5		5	2	6	1
251 to 500	33					2		1	
501 to 1,000	10							1	
Over 1,000	3					1			

	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.
Number of establishments	23	3	31	22	119	27	9	4	9
Character of organization:									
Individual	7	3	21	12	55	7	9	3	2
Firm and limited partnership	5		4	6	43	5		1	1
Incorporated company	11		6	4	21	15			6
Capital:									
Total	$4,681,389	$6,193	$1,376,106	$1,088,725	$15,317,940	$5,214,042	$28,060	$2,460	$922,088
Land	$249,842	$1,960	$28,438	$60,980	$360,099	$204,447	$1,765	$140	$97,635
Buildings	$597,407	$858	$156,457	$172,720	$1,339,948	$638,179	$12,000	$570	$118,736
Machinery, tools, and implements	$439,040	$925	$85,246	$148,295	$1,745,968	$471,193	$4,090	$405	$73,743
Cash and sundries	$3,395,100	$2,450	$1,105,965	$706,730	$11,871,925	$3,900,223	$5,205	$1,345	$631,969
Proprietors and firm members	17	3	30	28	160	19	9	6	4
Salaried officials, clerks, etc.:									
Total number	53		36	18	355	72			20
Salaries	$61,063		$26,798	$17,429	$405,648	$95,507			$35,360
Officers of corporations—									
Number	19		4	1	27	17			11
Salaries	$31,310		$4,400	$600	$82,764	$39,888			$24,040
General superintendents, managers, clerks, etc.—									
Total number	34		32	17	328	55			9
Salaries	$29,753		$22,398	$16,829	$322,884	$55,624			$11,320
Men—									
Number	32		30	17	289	52			9
Salaries	$29,153		$21,482	$16,829	$304,341	$54,362			$11,320
Women—									
Number	2		2		39	3			
Salaries	$600		$916		$18,543	$1,262			

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.
Wage-earners, including pieceworkers, and total wages—									
Greatest number employed at any one time during the year	993	4	794	513	8,604	1,747	19	3	199
Least number employed at any one time during the year	707	4	502	393	5,846	1,233	18	1	175
Average number	810	4	587	455	7,010	1,427	18	1	185
Wages	$321,658	$1,341	$229,268	$156,182	$3,379,698	$559,142	$3,550	$240	$98,578
Men, 16 years and over—									
Average number	810	4	584	442	6,955	1,425	18	1	184
Wages	$321,658	$1,341	$228,761	$152,716	$3,358,807	$558,498	$3,550	$240	$98,422
Women, 16 years and over—									
Average number	.....	.....	.....	8	48	.....	.....	.....	.....
Wages	.....	.....	.....	$2,496	$19,307	.....	.....	.....	.....
Children, under 16 years—									
Average number	.....	.....	3	5	7	2	.....	.....	1
Wages	.....	.....	$507	$970	$1,584	$644	.....	.....	$156
Average number of wage-earners, including pieceworkers, employed during each month:									
Men, 16 years and over—									
January	771	4	687	405	6,743	1,243	19	3	176
February	775	4	655	406	6,845	1,246	19	3	175
March	808	4	614	445	6,804	1,396	18	1	175
April	818	4	597	433	6,821	1,394	18	1	173
May	889	4	604	451	6,731	1,358	19	1	173
June	821	4	556	469	6,448	1,511	19	1	183
July	846	4	484	450	6,481	1,458	18	1	184
August	859	4	530	447	6,697	1,596	18	1	186
September	822	4	568	449	7,190	1,531	18	1	193
October	778	4	569	454	7,483	1,501	17	1	193
November	772	4	569	446	7,574	1,452	18	1	195
December	770	4	581	443	7,638	1,409	18	1	194
Women, 16 years and over—									
January	.....	.....	.....	8	41	.....	.....	.....	.....
February	.....	.....	.....	8	40	.....	.....	.....	.....
March	.....	.....	.....	8	39	.....	.....	.....	.....
April	.....	.....	.....	8	40	.....	.....	.....	.....
May	.....	.....	.....	8	47	.....	.....	.....	.....
June	.....	.....	.....	8	47	.....	.....	.....	.....
July	.....	.....	.....	8	45	.....	.....	.....	.....
August	.....	.....	.....	8	47	.....	.....	.....	.....
September	.....	.....	.....	8	52	.....	.....	.....	.....
October	.....	.....	.....	8	59	.....	.....	.....	.....
November	.....	.....	.....	8	61	.....	.....	.....	.....
December	.....	.....	.....	8	64	.....	.....	.....	.....
Children, under 16 years—									
January	.....	.....	2	4	7	3	.....	.....	1
February	.....	.....	2	4	7	3	.....	.....	1
March	.....	.....	2	4	7	3	.....	.....	1
April	.....	.....	3	4	7	3	.....	.....	1
May	.....	.....	3	5	7	3	.....	.....	1
June	.....	.....	3	6	7	3	.....	.....	1
July	.....	.....	3	6	7	1	.....	.....	1
August	.....	.....	3	6	7	2	.....	.....	1
September	.....	.....	3	6	7	2	.....	.....	1
October	.....	.....	2	6	7	2	.....	.....	1
November	.....	.....	2	5	7	2	.....	.....	1
December	.....	.....	2	5	7	2	.....	.....	1
Miscellaneous expenses:									
Total	$112,659	$78	$102,332	$40,860	$662,553	$248,297	$483	$13	$27,846
Rent of works	$1,950	.....	$571	$1,531	$78,299	$800	$10	.....	$800
Taxes, not including internal revenue	$18,455	$44	$10,958	$4,059	$88,961	$30,881	$191	$6	$2,209
Rent of offices, insurance, interest, and all sundry expenses not hitherto included	$92,254	$34	$90,803	$35,270	$500,293	$216,616	$282	$7	$24,837
Contract work	.....	.....	.....	.....	.....	.....	.....	.....	.....
Materials used:									
Total cost	$2,881,896	$6,355	$1,943,204	$1,411,457	$19,793,757	$4,697,367	$9,803	$2,202	$557,131
Hides and skins—									
Hides (all kinds), number	377,676	150	404,988	138,495	1,029,535	751,935	890	650	66,865
Cost	$2,284,131	$500	$1,214,636	$786,892	$4,703,949	$3,582,896	$2,925	$1,662	$435,883
Calf and kip skins, number	100	700	4,012	132,738	2,229,559	350	300	100	711
Cost	$100	$420	$5,410	$145,931	$2,705,877	$275	$228	$150	$1,135
Goatskins, number	100	300	.....	41,000	9,725,120	400	20	200	170
Cost	$40	$60	.....	$16,500	$4,708,971	$200	$5	$50	$101
Sheepskins, number	88,961	12,000	1,616,870	330,890	7,529,451	617,447	1,124	.....	629
Cost	$50,665	$4,800	$342,620	$247,786	$2,290,309	$328,216	$396	.....	$301
All other skins, number	2,500	100	20	.....	47,946	2,310	1,050	.....	8,678
Cost	$1,200	$20	$6	.....	$41,963	$1,140	$1,038	.....	$3,623
Tanning materials—									
Hemlock bark, cords	1,084	.....	40,622	3,116	61,971	89,399	32	.....	774
Cost	$9,440	.....	$220,347	$21,888	$498,184	$483,720	$164	.....	$7,397
Oak bark, cords	29,802	20	4,000	12,087	1,070	20	75	75	2,936
Cost	$244,028	$80	$28,000	$80,603	$8,817	$100	$525	$255	$28,797
Gambier, bales	70	.....	1,078	.....	15,469	1,610	65	.....	78
Cost	$526	.....	$7,370	.....	$106,299	$11,050	$426	.....	$487
Hemlock bark extract, barrels	252	.....	197	1	3,688	56	6	.....	69
Cost	$2,745	.....	$2,654	$13	$45,683	$677	$97	.....	$910
Oak bark extract, barrels	13,024	12	5	309	13,467	252	32	.....	800
Cost	$136,590	$135	$85	$3,291	$124,510	$2,524	$550	.....	$9,757
Quebracho, barrels or bales	216	.....	10	25	509	399	2	.....	.....
Cost	$4,311	.....	$141	$400	$7,884	$6,608	$25	.....	.....
Sumac, tons	99	8	125	111	3,613	75	.....	.....	1
Cost	$3,402	$120	$7,675	$6,385	$190,579	$4,341	.....	.....	$87
Chemicals	$3,191	$50	$5,615	$15,560	$307,045	$30,128	$150	.....	$2,420
All other materials used in tanning	$23,681	.....	$11,400	$2,547	$300,328	$34,101	$362	.....	$5,991

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.
Materials used—Continued.									
Total cost—Continued.									
Currying materials—									
Purchased rough, sides	500		4,288	12,112	2,882,836		150		7,200
Cost	$2,500		$7,860	$44,325	$2,492,061		$600		$27,800
Rough leather, sides	500		1,580	11,439	338,991		150		7,200
Cost	$2,500		$5,431	$43,836	$1,051,403		$600		$27,800
Rough grains, sides					12,578				
Cost					$31,704				
Rough splits, sides				673	1,550,723				
Cost				$489	$1,056,670				
All other rough leather, sides			2,658		980,544				
Cost			$2,429		$352,284				
Oil, stearin, degras, tallow, and all other materials used in currying	$51,608	$87	$22,092	$16,509	$735,785	$93,694	$1,310	$85	$18,534
Fuel	$16,804		$12,962	$8,809	$219,397	$24,804	$712		$6,494
Rent of power and heat					$9,819	$1,350			
Mill supplies	$4,128		$5,068	$1,598	$27,620	$8,367	$55		$2,794
All other materials	$19,607	$50	$1,567	$1,370	$80,502	$11,553	$75		$710
Freight	$23,199	$33	$38,696	$11,050	$188,175	$71,623	$165		$4,000
Products:									
Total value	$3,757,016	$10,157	$2,451,713	$1,754,102	$26,067,714	$6,015,590	$19,336	$3,556	$816,720
Sold in the rough, sides	14,014		450	125,760	254,889	122,757	700		
Value	$67,071		104	$260,350	$293,434	$128,426	$1,600		
Rough leather, sides	14,014		150	1,500	24,119	19,632			
Value	$67,071		$525	$4,450	$41,151	$66,419			
Rough grains, sides				62,000	59,242				
Value				$170,500	$82,938				
Rough splits, sides			1,200	62,260	171,528	103,125			
Value			$689	$85,400	$169,345	$62,007			
All other rough leather, sides			2,100				700		
Value			$1,890				$1,600		
Sole leather, sides	442,975		685,659	48,310	69,980	914,954	115	50	232
Value	$2,314,779		$1,451,679	$221,476	$267,500	$3,090,684	$345	$125	$1,392
Oak, sides	442,975			23,900		25,000		50	232
Value	$2,314,779			$134,576		$75,000		$125	$1,392
Union, sides				24,410	60,000				
Value				$86,900	$245,000				
Hemlock, sides			685,659		9,980	889,954	115		
Value			$1,451,679		$22,500	$3,015,684	$345		
Chrome, sides									
Value									
Upper leather, other than calf or kip skins	$1,000	$500	$349,312	$214,232	$7,275,086	$817,888	$1,205	$2,550	
Grain, satin, kangaroo, etc., side leather, sides		200	119,276	37,005	1,859,287	281,559	450	1,147	
Value		$500	$269,187	$109,011	$4,361,481	$754,888	$1,000	$2,394	
Finished splits, number	1,000		148,568	119,166	3,581,012	100,000	350	547	
Value	$1,000		$79,825	$105,221	$2,852,551	$63,000	$175	$150	
Patent and enameled shoe leather, sides					18,650				
Value					$61,054				
Horsehide, sides			100				10	3	
Value			$300				$30	$6	
Calf and kip skins, tanned and finished, number		700	5,127	132,738	2,248,254	150	300	100	371
Value		$767	$9,396	$209,940	$4,017,224	$150	$410	$250	$500
Flesh finished, number		300	200	132,738	6,335		80		171
Value		$437	$400	$209,940	$7,395		$60		$200
Grain finished, number		400	4,927		2,241,919	150	200	100	
Value		$330	$8,996		$4,009,829	$150	$325	$250	
Patent and enameled, number							20		200
Value							$25		$300
Goatskins, tanned and finished, number	100	300		41,000	8,956,118		20	200	170
Value	$70	$200		$23,750	$6,012,205		$10	$181	$204
Black, number	100	300		41,000	5,001,784			75	4
Value	$70	$200		$23,750	$3,427,021			$81	$4
Colored, number					3,954,334		20	125	166
Value					$2,585,184		$10	$100	$200
Finished leather	$1,169,737	$3,500	$474,700	$601,287	$5,170,537	$1,331,931	$5,268	$150	$631,044
Sheepskins, tanned and finished, number	88,961	6,000	1,940,870	330,890	8,590,563	617,423	1,124		629
Value	$44,410	$3,000	$472,520	$137,400	$3,636,839	$234,336	$773		$522
Belting leather, sides	6,532		104	36,188	226,443				52,946
Value	$33,426		$424	$162,406	$945,723				$242,095
Harness leather, sides	206,748	100	230	16,634	4,600	212,386	655	100	72,386
Value	$1,091,901	$500	$950	$91,039	$14,800	$989,832	$2,995	$450	$387,467
Carriage leather, hides									160
Value									$960
Trunk, bag, and pocketbook leather			$806	$210,442	$316,646	$107,763			
Bookbinders' leather					$194,456				
Leather for manufacture of gloves					$13,350		$1,500		
Furniture leather, hides					6,960				
Value					$48,723				
All other leather	$139,905	$40	$21,816	$20,350	$957,817	$222,196	$55		$165,070
All other products, including by-products, offal, etc	$64,454	$5,100	$19,656	$188,506	$992,728	$291,102	$110		$6,670
Amount charged for tanning or currying for others		$50	$122,050	$14,211	$1,081,183	$133,213	$10,333		$11,840
Custom work, stock tanned or finished for others:									
Estimated value in condition received		$60	$575,507	$19,251	$3,817,194	$185,691	$21,128		$62,600
Estimated value after being tanned or curried		$120	$730,935	$33,477	$4,757,149	$340,450	$33,650		$75,340
Tanned—									
Hides, number			4,706	12,810	84,500	61,822	4,143		5,400
Estimated value in condition received			$24,240	$19,251	$318,500	$185,466	$19,525		$35,600
Estimated value after being tanned or curried			$33,760	$33,477	$407,500	$340,000	$30,750		$43,340
Skins, number		100	2,162,200		6,388,588	125	2,130		
Estimated value in condition received		$60	$452,217		$2,344,675	$225	$1,603		
Estimated value after being tanned or curried		$120	$583,700		$3,088,590	$450	$2,900		

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.
Custom work, stock tanned or finished for others—Continued.									
Estimated value after being tanned or curried—Continued.									
Curried—									
Sides, number			381,217		512,965				9,120
Estimated value in condition received			$99,050		$902,894				$27,000
Estimated value after being tanned or curried			$113,475		$917,066				$32,000
Splits, number					182,160				
Estimated value in condition received					$126,000				
Estimated value after being tanned or curried					$175,000				
Skins, number					299,147				
Estimated value in condition received					$125,125				
Estimated value after being tanned or curried					$168,993				
Comparison of products:									
Number of establishments reporting for both years	22	3	29	21	101	23	8	4	9
Value for census year	$3,743,516	$10,157	$2,364,810	$1,495,121	$19,408,833	$5,190,613	$18,501	$3,556	$816,720
Value for preceding business year	$3,660,166	$3,304	$2,112,764	$1,429,441	$18,187,227	$4,776,251	$17,500	$3,400	$798,340
Power:									
Number of establishments reporting	22		27	15	116	23	2		8
Total horsepower	1,836		1,712	1,008	11,553	3,344	35		388
Owned—									
Engines—									
Steam, number	38		32	24	138	45	2		11
Horsepower	1,823		1,419	1,008	10,935	3,269	35		388
Gas and gasoline, number					1				
Horsepower					2				
Water wheels, number	1		15		5				
Horsepower	10		290		126				
Electric motors, number			1		1	1			
Horsepower			3		10	10			
Other power, number	1								
Horsepower	3								
Rented—									
Electric, horsepower					161				
Other kind, horsepower					319	65			
Furnished to other establishments, horsepower					12				
Establishments classified by number of persons employed, not including proprietors and firm members:									
Total number of establishments	23	3	31	22	119	27	9	4	9
No employees		2	3	3	1	1	2	3	
Under 5	3	1	7	9	7	3	6	1	3
5 to 20	4		7	4	32	3	1		2
21 to 50	11		8	2	36	7			2
51 to 100	3		4	2	21	3			2
101 to 250	2		2	2	11	3			
251 to 500					9	2			
501 to 1,000					2				
Over 1,000									

	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.
Number of establishments	12	77	147	75	58	16	254	5	6
Character of organization:									
Individual	2	23	64	55	25	7	110	2	5
Firm and limited partnership	5	23	57	17	21	3	63	2	
Incorporated company	5	31	26	3	12	1	81	1	
Capital:									
Total	$1,900,277	$9,906,119	$19,062,817	$1,299,798	$5,822,580	$173,144	$57,320,227	$157,900	$5,595
Land	$95,695	$1,064,690	$633,849	$36,863	$207,860	$11,170	$8,816,195	$21,700	$545
Buildings	$224,824	$1,241,677	$2,251,812	$180,040	$690,006	$27,470	$7,730,782	$18,000	$1,875
Machinery, tools, and implements	$179,833	$772,302	$2,204,338	$60,755	$279,804	$17,204	$3,782,119	$19,900	$875
Cash and sundries	$1,399,925	$6,827,450	$13,972,818	$1,022,140	$4,644,910	$117,300	$36,991,131	$103,300	$2,300
Proprietors and firm members	14	72	199	94	76	23	260	6	5
Salaried officials, clerks, etc.:									
Total number	51	276	193	28	74	1	506	6	
Salaries	$54,275	$412,847	$264,724	$29,259	$80,680	$900	$643,895	$7,930	
Officers of corporations—									
Number	2	57	19	4	18		59	1	
Salaries	$3,200	$175,137	$72,688	$10,450	$35,000		$125,536	$2,500	
General superintendents, managers, clerks, etc.—									
Total number	49	219	174	24	56	1	447	5	
Salaries	$51,075	$237,710	$192,036	$18,809	$45,680	$900	$518,359	$5,430	
Men—									
Number	37	203	162	24	49	1	429	5	
Salaries	$45,867	$230,005	$187,473	$18,809	$43,462	$900	$510,118	$5,430	
Women—									
Number	12	16	12		7		18		
Salaries	$5,208	$7,705	$4,563		$2,218		$8,241		
Wage-earners, including pieceworkers, and total wages:									
Greatest number employed at any one time during the year	710	5,009	7,706	550	1,513	55	15,966	73	10
Least number employed at any one time during the year	465	3,330	5,596	309	1,256	53	11,311	62	10
Average number	552	4,178	6,530	366	1,384	53	13,396	69	10
Wages	$219,292	$2,057,197	$2,775,115	$105,132	$617,409	$27,532	$5,457,518	$32,092	$2,000
Men, 16 years and over—									
Average number	521	4,101	6,397	366	1,384	52	12,889	67	10
Wages	$209,728	$2,038,955	$2,738,721	$105,132	$617,409	$27,382	$5,311,200	$31,572	$2,000
Women, 16 years and over—									
Average number	31	39	122			1	287	2	
Wages	$9,564	$9,900	$33,510			$150	$84,078	$520	
Children, under 16 years—									
Average number		38	11				270		
Wages		$8,342	$2,884				$62,240		

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.
Average number of wage-earners, including pieceworkers, employed during each month:									
Men, 16 years and over—									
January	442	4,090	6,655	335	1,350	51	12,141	69	10
February	444	4,150	6,769	344	1,389	51	12,307	70	10
March	485	4,389	6,674	342	1,424	51	12,348	71	10
April	519	4,392	6,580	346	1,425	51	12,369	68	10
May	540	4,425	6,411	408	1,431	52	12,199	66	10
June	492	3,940	6,066	435	1,395	53	12,299	63	10
July	497	3,668	5,939	438	1,356	53	13,117	61	10
August	534	3,836	6,146	384	1,353	53	13,650	61	10
September	578	4,024	6,319	365	1,346	52	13,632	67	10
October	576	4,057	6,345	333	1,369	52	13,582	69	10
November	575	4,137	6,399	332	1,375	52	13,389	70	10
December	571	4,100	6,457	330	1,401	52	13,123	69	10
Women, 16 years and over—									
January	22	28	157	.....	.....	1	317	2	.....
February	26	29	157	.....	.....	1	300	2	.....
March	27	31	146	.....	.....	1	281	2	.....
April	28	30	144	.....	.....	1	261	2	.....
May	25	34	139	.....	.....	1	245	2	.....
June	25	43	143	.....	.....	1	236	2	.....
July	30	43	82	.....	.....	1	291	2	.....
August	30	62	93	.....	.....	1	291	2	.....
September	35	59	96	.....	.....	2	306	2	.....
October	36	37	98	.....	.....	2	301	2	.....
November	40	34	100	.....	.....	2	304	2	.....
December	46	34	109	.....	.....	2	316	2	.....
Children, under 16 years—									
January	.....	37	11	.....	.....	.....	284	.....	.....
February	.....	37	11	.....	.....	.....	274	.....	.....
March	.....	36	11	.....	.....	.....	246	.....	.....
April	.....	37	10	.....	.....	.....	239	.....	.....
May	.....	39	10	.....	.....	.....	236	.....	.....
June	.....	38	10	.....	.....	.....	236	.....	.....
July	.....	36	10	.....	.....	.....	239	.....	.....
August	.....	35	12	.....	.....	.....	301	.....	.....
September	.....	39	12	.....	.....	.....	285	.....	.....
October	.....	38	12	.....	.....	.....	283	.....	.....
November	.....	38	13	.....	.....	.....	284	.....	.....
December	.....	42	13	.....	.....	.....	283	.....	.....
Miscellaneous expenses:									
Total	$145,003	$507,753	$558,470	$32,685	$160,315	$4,551	$2,432,724	$5,882	$525
Rent of works	$1,400	$81,817	$39,090	$640	$3,090	.....	$47,955	$1,268	.....
Taxes, not including internal revenue	$6,445	$36,667	$50,148	$3,829	$15,488	$812	$186,805	$444	$100
Rent of offices, insurance, interest, and all sundry expenses not hitherto included	$133,523	$428,187	$468,232	$28,216	$109,706	$3,739	$2,244,026	$2,590	$425
Contract work	$3,635	$11,132	$1,000	.....	$32,031	.....	$3,938	$1,580	.....
Materials used:									
Total cost	$2,053,367	$9,582,507	$17,424,300	$1,129,402	$3,774,298	$190,184	$42,403,503	$207,317	$12,743
Hides and skins—									
Hides (all kinds), number	73,362	395,317	2,000,132	160,484	415,762	30,665	4,848,759	25,754	3,350
Cost	$250,170	$3,632,765	$8,969,164	$939,353	$2,932,022	$139,535	$22,955,326	$103,016	$9,788
Calf and kip skins, number	11,456	553,900	1,048,722	10,755	27,421	4,099	388,205	2,600	220
Cost	$15,268	$463,600	$1,120,963	$10,638	$29,242	$4,445	$394,981	$4,160	$170
Goatskins, number	258,108	4,979,691	1,751,478	2,146	1,500	252	21,854,197	.....	50
Cost	$162,009	$2,206,983	$1,242,788	$721	$950	$116	$10,566,749	.....	$12
Sheepskins, number	1,123,904	976,060	6,665,810	3,089	86,670	2,365	1,949,730	201,600	125
Cost	$510,500	$399,443	$1,945,142	$629	$54,726	$600	$492,520	$68,000	$16
All other skins, number	.....	717,597	1,050,302	2,046	8,736	2,100	108,544	.....	.....
Cost	.....	$365,801	$579,088	$2,294	$1,770	$1,500	$50,661	.....	.....
Tanning materials—									
Hemlock bark, cords	3,703	4,016	178,797	1,808	5,497	936	565,062	26	.....
Cost	$25,391	$39,619	$1,190,447	$8,524	$38,785	$7,451	$3,460,489	$260	.....
Oak bark, cords	.....	15,150	4,077	20,467	23,798	1,247	64,392	.....	805
Cost	.....	$170,830	$32,951	$107,242	$227,954	$20,435	$437,323	.....	$1,695
Gambier, bales	712	15,692	19,098	11	2,162	60	2,794	.....	10
Cost	$4,621	$111,063	$123,568	$43	$20,693	$504	$16,985	.....	$40
Hemlock bark extract, barrels	40	1,024	2,076	1	2,855	.....	304	.....	.....
Cost	$480	$12,302	$25,349	$13	$29,479	.....	$3,368	.....	.....
Oak bark extract, barrels	.....	2,902	526	270	7,112	85	5,615	.....	9
Cost	.....	$38,457	$5,470	$3,294	$70,727	$1,413	$56,728	.....	$135
Quebracho, barrels or bales	.....	5,065	615	60	4,814	.....	3,775	.....	.....
Cost	.....	$70,375	$9,437	$300	$70,899	.....	$50,777	.....	.....
Sumac, tons	.....	1,121	2,153	1	143	2	206	.....	.....
Cost	.....	$54,940	$103,626	$65	$6,018	$90	$10,008	.....	.....
Chemicals	$6,393	$136,413	$330,846	$683	$1,823	$297	$919,582	$5,180	$15
All other materials used in tanning	$9,489	$124,728	$275,420	$1,171	$11,167	$375	$653,336	$3,080	$240
Currying materials—									
Purchased rough, sides	254,359	537,824	119,400	921	4,224	.....	382,087	7,200	.....
Cost	$856,995	$1,139,113	$418,080	$1,630	$19,431	.....	$891,999	$12,500	.....
Rough leather, sides	68,194	205,043	111,300	421	4,224	.....	184,654	7,200	.....
Cost	$297,197	$425,133	$393,580	$730	$19,431	.....	$662,587	$12,500	.....
Rough grains, sides	.....	136,770	8,100	500	.....	.....	7,890	.....	.....
Cost	.....	$384,392	$24,500	$900	.....	.....	$25,314	.....	.....
Rough splits, sides	.....	140,891	.....	.....	.....	.....	5,580	.....	.....
Cost	.....	$241,395	.....	.....	.....	.....	$4,735	.....	.....
All other rough leather, sides	186,165	55,120	.....	.....	.....	.....	188,963	.....	.....
Cost	$559,798	$88,193	.....	.....	.....	.....	$199,368	.....	.....
Oil, stearin, degras, tallow, and all other materials used in currying	$59,106	$275,138	$525,828	$10,791	$194,556	$8,550	$510,107	$7,955	$375
Fuel	$8,829	$104,706	$167,180	$2,581	$28,539	$2,051	$211,810	$1,610	$27
Rent of power and heat	$1,945	$3,260	$2,173	.....	.....	.....	$9,125	$150	.....
Mill supplies	$16,554	$22,584	$45,178	$1,523	$8,736	$413	$73,215	$432	$20
All other materials	$115,982	$97,078	$77,481	$764	$3,565	$185	$137,734	.....	$70
Freight	$9,635	$63,309	$228,121	$37,208	$23,216	$2,224	$500,680	$974	$140

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.
Products:									
Total value	$2,664,942	$13,747,155	$23,205,991	$1,502,378	$5,182,065	$249,728	$55,615,009	$292,939	$18,387
Sold in the rough, sides	2,071	329,751	679,928	105,857	65,060	2,586	666,080	200	2,360
Value	$1,168	$453,053	$1,130,248	$475,810	$88,617	$1,456	$1,318,801	$1,000	$8,400
Rough leather, sides	150	.....	172,022	105,607	400	300	283,283	200	3,360
Value	$208	.....	$523,331	$475,748	$1,200	$800	$888,984	$1,000	$8,400
Rough grains, sides	.....	44,219	53,792	.....	150	.....	83,744	.....	.....
Value	.....	$127,778	$180,119	.....	$400	.....	$195,092	.....	.....
Rough splits, sides	1,921	285,532	419,554	200	64,510	2,286	294,186	.....	.....
Value	$960	$325,280	$399,297	$12	$37,017	$656	$229,780	.....	.....
All other rough leather, sides	.....	.....	34,560	50	.....	.....	4,917	.....	.....
Value	.....	.....	$27,501	$50	.....	.....	$4,945	.....	.....
Sole leather, sides	.....	.....	1,446,242	31,389	134,962	806	3,133,522	.....	60
Value	.....	.....	$4,655,818	$124,449	$1,016,048	$3,030	$28,691,603	.....	$125
Oak, sides	.....	.....	.....	31,289	134,962	.....	335,894	.....	60
Value	.....	.....	.....	$124,249	$1,016,048	.....	$1,854,243	.....	$125
Union, sides	.....	.....	401,879	.....	.....	6	2,366,322	.....	.....
Value	.....	.....	$1,430,899	.....	.....	$30	$10,058,019	.....	.....
Hemlock, sides	.....	.....	1,044,363	100	.....	800	5,481,306	.....	.....
Value	.....	.....	$3,224,919	$200	.....	$3,000	$16,779,341	.....	.....
Chrome, sides	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value	.....	.....	.....	.....	.....	.....	.....	.....	.....
Upper leather, other than calf or kip skins	$173,325	$1,255,835	$6,903,855	$53,114	$11,428	$373	$2,057,788	.....	$340
Grain, satin, kangaroo, etc., side leather, sides	60,921	578,000	2,180,820	27,842	1,100	25	632,789	.....	165
Value	$127,066	$241,000	$5,177,509	$49,745	$2,875	$100	$1,400,727	.....	$340
Finished splits, number	59,000	44,000	2,025,943	9,000	.....	.....	635,969	.....	.....
Value	$46,259	$170,000	$1,677,080	$3,360	.....	.....	$626,134	.....	.....
Patent and enameled shoe leather, sides	.....	181,082	10,815	.....	1,600	.....	2,500	.....	.....
Value	.....	$830,540	$49,190	.....	$8,500	.....	$5,250	.....	.....
Horsehide, sides	.....	6,299	32	5	16	146	12,586	.....	.....
Value	.....	$14,295	$76	$9	$48	$273	$25,677	.....	.....
Calf and kip skins, tanned and finished, number	21,406	539,350	990,213	11,579	27,421	4,099	419,593	9,800	220
Value	$44,824	$999,235	$1,442,322	$18,743	$44,225	$7,597	$641,955	$22,615	$290
Flesh finished, number	150	.....	47,090	8,559	27,421	3,570	90,012	.....	120
Value	$400	.....	$159,034	$13,752	$44,225	$6,530	$201,779	.....	$190
Grain finished, number	21,256	10,750	917,765	3,020	.....	529	297,218	9,800	100
Value	$44,424	$28,235	$1,231,899	$4,991	.....	$1,067	$397,860	$22,615	$100
Patent and enameled, number	.....	528,600	25,358	.....	.....	.....	32,363	.....	.....
Value	.....	$971,000	$51,389	.....	.....	.....	$42,316	.....	.....
Goatskins, tanned and finished, number	258,108	4,969,191	1,801,518	2,046	1,500	252	21,602,961	.....	50
Value	$200,928	$3,061,738	$1,898,957	$1,212	$1,775	$250	$15,796,782	.....	$25
Black, number	258,108	3,416,489	1,798,518	1,740	1,500	12	19,828,129	.....	20
Value	$200,928	$2,190,402	$1,896,457	$976	$1,775	$10	$14,182,422	.....	$10
Colored, number	.....	1,552,702	3,000	306	.....	240	1,774,832	.....	30
Value	.....	$871,336	$2,500	$236	.....	$240	$1,614,360	.....	$15
Finished leather	$1,487,452	$6,479,700	$4,897,881	$649,778	$3,594,249	$146,630	$4,214,641	$163,500	$8,407
Sheepskins, tanned and finished, number	1,153,904	454,988	2,997,036	3,089	86,670	2,365	1,090,822	201,600	125
Value	$434,915	$283,012	$1,360,885	$1,214	$39,535	$1,140	$600,423	$106,500	$52
Belting leather, sides	155,853	.....	13,250	116,400	140,891	.....	5,846	6,200	.....
Value	$862,711	.....	$89,053	$556,175	$678,187	.....	$33,275	$47,000	.....
Harness leather, sides	87,214	33,865	146,341	29,156	386,015	31,579	450,352	.....	2,850
Value	$189,826	$177,846	$765,500	$89,184	$1,831,651	$142,790	$2,491,722	.....	$8,355
Carriage leather, hides	.....	382,502	3,506	160	85,661	.....	36,300	.....	.....
Value	.....	$3,565,538	$14,523	$400	$727,373	.....	$449,676	.....	.....
Trunk, bag, and pocketbook leather	.....	$906,733	$379,586	$2,800	.....	.....	$475,939	.....	.....
Bookbinders' leather	.....	$975,089	$385,292	.....	$88,603	.....	.....	.....	.....
Leather for manufacture of gloves	.....	$2,040	$1,860,388	.....	$300	$2,700	$134,026	.....	.....
Furniture leather, hides	.....	59,311	5,555	.....	23,410	.....	5,700	.....	.....
Value	.....	$569,442	$42,654	.....	$228,600	.....	$29,580	.....	.....
All other leather	$312,324	$1,114,865	$954,622	$156,328	$375,906	$89,742	$1,135,504	$90,824	$700
All other products, including by-products, offal, etc	$413,775	$234,035	$278,638	$19,338	$96,762	$175	$592,954	$5,000	$100
Amount charged for tanning or currying for others	$31,146	$148,694	$1,043,650	$3,611	$8,060	$475	$1,164,981	$20,000	.....
Custom work, stock tanned or finished for others:									
Estimated value in condition received	$84,752	$698,698	$3,670,166	$6,802	$8,176	$993	$3,787,779	$44,000	.....
Estimated value after being tanned or curried	$117,298	$883,662	$4,860,233	$11,574	$11,775	$1,518	$5,211,320	$66,000	.....
Tanned—									
Hides, number	1,432	20,025	17,424	2,949	75	133	343,647	$11,096	.....
Estimated value in condition received	$5,052	$181,205	$53,290	$6,400	$275	$407	$1,361,476	$44,000	.....
Estimated value after being tanned or curried	$6,448	$224,638	$73,130	$10,897	$400	$690	$1,971,863	$66,000	.....
Skins, number	164,000	481,323	6,953,686	476	20,700	293	3,527,468	.....	.....
Estimated value in condition received	$72,500	$273,535	$3,075,652	$249	$7,900	$171	$2,357,267	.....	.....
Estimated value after being tanned or curried	$101,850	$352,172	$4,181,988	$467	$11,375	$808	$3,215,907	.....	.....
Curried—									
Sides, number	1,600	5,900	.....	75	.....	200	5,512	.....	.....
Estimated value in condition received	$7,200	$19,000	.....	$100	.....	$400	$19,036	.....	.....
Estimated value after being tanned or curried	$9,000	$27,000	.....	$135	.....	$500	$23,550	.....	.....
Splits, number	.....	149,346	.....	.....	.....	.....	.....	.....	.....
Estimated value in condition received	.....	$216,958	.....	.....	.....	.....	.....	.....	.....
Estimated value after being tanned or curried	.....	$267,852	.....	.....	.....	.....	.....	.....	.....
Skins, number	.....	8,000	1,015,249	67	.....	25	.....	.....	.....
Estimated value in condition received	.....	$8,000	$541,224	$53	.....	$15	.....	.....	.....
Estimated value after being tanned or curried	.....	$12,000	$605,115	$75	.....	$20	.....	.....	.....
Comparison of products;									
Number of establishments reporting for both years	11	70	183	65	55	15	234	5	5
Value for census year	$2,659,005	$13,621,933	$19,781,901	$1,103,987	$5,101,603	$248,328	$53,962,548	$292,939	$18,387
Value for preceding business year	$2,441,604	$13,048,389	$18,618,055	$989,350	$4,865,808	$285,262	$47,563,376	$292,200	$18,600

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.
Power:									
Number of establishments reporting	10	71	142	26	44	10	215	3	1
Total horsepower	774	4,712	13,613	989	2,440	206	24,454	152	18
Owned—									
Engines—									
Steam, number	9	80	214	28	57	9	422	2	1
Horsepower	536	4,487	11,553	917	2,302	189	22,428	145	18
Gas and gasoline, number	.....	1	5	1	1	.....	12	.....	.....
Horsepower	.....	4	290	5	20	.....	513	.....	.....
Water wheels, number	3	.....	42	6	.....	2	13	.....	.....
Horsepower	81	.....	1,258	67	.....	17	118	.....	.....
Electric motors, number	1	24	57	.....	7	.....	34	.....	.....
Horsepower	12	181	451	.....	118	.....	704	.....	.....
Other power, number	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rented—									
Electric, horsepower	145	.....	6	.....	.....	.....	522	7	.....
Other kind, horsepower	.....	40	55	.....	.....	.....	169	.....	.....
Furnished to other establishments, horsepower	.....	22	10	5	.....	.....	.....	.....	.....
Establishments classified by number of persons employed, not including proprietors and firm members:									
Total number of establishments	12	77	147	75	58	16	254	5	5
No employees	.....	1	5	28	9	6	28	.....	2
Under 5	3	7	20	34	14	7	54	2	3
5 to 20	2	16	37	9	18	2	41	.....	.....
21 to 50	2	22	38	1	11	1	37	3	.....
51 to 100	2	12	24	1	5	.....	45	.....	.....
101 to 250	3	15	19	2	.....	.....	41	.....	.....
251 to 500	.....	4	3	.....	.....	.....	4	.....	.....
501 to 1,000	.....	.....	1	.....	1	.....	3	.....	.....
Over 1,000	.....	.....	.....	.....	.....	.....	1	.....	.....

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]
Number of establishments	44	11	4	8	65	3	46	42	8
Character of organization:									
Individual	29	8	1	4	44	1	30	10	4
Firm and limited partnership	11	2	.....	2	12	2	8	14	3
Incorporated company	4	1	3	2	9	.....	8	18	1
Capital:									
Total	$3,444,197	$24,763	$8,625	$160,906	$4,032,387	$17,600	$5,049,615	$18,283,591	$63,351
Land	$94,530	$240	$425	$4,900	$86,547	$1,000	$110,395	$1,113,870	$10,950
Buildings	$400,620	$2,826	$2,900	$13,500	$478,999	$2,500	$554,202	$1,962,329	$16,163
Machinery, tools, and implements	$470,725	$3,016	$2,100	$7,250	$219,561	$1,600	$458,012	$1,533,570	$9,738
Cash and sundries	$2,478,322	$18,681	$3,200	$135,256	$3,247,280	$12,500	$3,927,006	$13,668,822	$26,500
Proprietors and firm members	55	12	1	10	70	6	38	43	14
Salaried officials, clerks, etc:									
Total number	29	2	.....	5	59	.....	37	230	1
Salaries	$35,496	$1,300	.....	$5,450	$84,602	.....	$62,889	$314,956	$600
Officers of corporations—									
Number	2	.....	.....	.....	12	.....	8	26	.....
Salaries	$11,000	.....	.....	.....	$38,200	.....	$34,375	$88,850	.....
General superintendents, managers, clerks, etc.—									
Total number	27	2	.....	5	47	.....	29	204	1
Salaries	$24,496	$1,300	.....	$5,450	$46,402	.....	$28,514	$226,106	$600
Men—									
Number	27	2	.....	5	43	.....	28	191	1
Salaries	$24,496	$1,300	.....	$5,450	$44,692	.....	$28,139	$219,263	$600
Women—									
Number	.....	.....	.....	.....	4	.....	1	13	.....
Salaries	.....	.....	.....	.....	$1,710	.....	$375	$6,843	.....
Wage-earners, including pieceworkers, and total wages:									
Greatest number employed at any one time during the year	1,053	32	3	128	984	4	819	6,395	33
Least number employed at any one time during the year	659	29	3	26	839	4	579	4,575	11
Average number	803	29	3	68	889	3	664	5,262	22
Wages	$239,870	$9,216	$1,500	$31,225	$313,677	$2,125	$224,444	$2,241,861	$6,963
Men, 16 years and over—									
Average number	799	25	3	68	886	3	663	5,166	22
Wages	$239,586	$8,638	$1,500	$31,225	$313,256	$2,125	$224,399	$2,226,108	$6,963
Women, 16 years and over—									
Average number	.....	1	.....	.....	.....	.....	.....	29	.....
Wages	.....	$50	.....	.....	.....	.....	.....	$6,783	.....
Children, under 16 years—									
Average number	4	3	.....	.....	3	.....	1	67	.....
Wages	$284	$528	.....	.....	$421	.....	$45	$8,970	.....
Average number of wage-earners, including pieceworkers, employed during each month:									
Men, 16 years and over—									
January	789	23	2	42	865	3	604	4,882	20
February	882	26	3	42	862	4	610	4,965	19
March	819	27	3	35	874	4	657	4,959	25
April	775	27	3	27	881	4	675	4,905	24
May	1,000	24	3	30	872	5	688	5,508	24
June	832	24	3	48	889	4	662	5,588	25
July	859	24	3	78	889	3	656	5,644	23
August	713	25	3	87	909	3	683	5,287	26
September	694	25	3	89	915	3	732	5,201	26
October	743	26	3	104	919	3	665	5,076	26
November	729	25	3	110	919	3	653	5,023	16
December	751	22	3	128	839	3	677	4,951	15

[1] Includes establishments distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]
Average number of wage-earners, including pieceworkers, employed during each month—Continued.									
Women, 16 years and over—									
January		1						28	
February		1						29	
March		1						29	
April		1						27	
May		1						28	
June		1						30	
July		1						29	
August		1						29	
September		1						29	
October		1						29	
November		1						29	
December		1						29	
Children, under 16 years—									
January	4	3			3			60	
February	4	3			3			62	
March	4	3			3			72	
April	4	3			4			71	
May	3	3			4			63	
June	3	3			3		4	67	
July	4	3			3		4	67	
August	3	3			3		2	72	
September	4	3			3			72	
October	4	3			3			68	
November	3	3			3			67	
December	3	3			3			69	
Miscellaneous expenses:									
Total	$91,197	$1,158	$215	$10,694	$252,548	$580	$144,458	$735,767	$1,890
Rent of works	$1,060	$469	$1	$1,000	$7,010	$130	$415	$10,690	$206
Taxes, not including internal revenue	$12,969	$108	$64	$887	$9,430	$170	$15,259	$79,147	$289
Rent of offices, insurance, interest, and all sundry expenses not hitherto included	$77,168	$581	$150	$8,807	$236,103	$280	$128,784	$645,930	$1,345
Contract work					5				$50
Materials used:									
Total cost	$2,184,311	$52,207	$3,482	$300,162	$3,695,817	$25,701	$2,541,197	$16,040,304	$31,881
Hides and skins—									
Hides (all kinds), number	319,802	10,911	1,005	45,132	430,608	4,375	358,643	2,106,986	695
Cost	$1,878,419	$29,567	$2,040	$216,400	$3,092,237	$13,100	$2,092,451	$9,394,950	$2,533
Calf and kip skins, number	6,919	3,500	210	31,450	2,594	4,720	2,196	2,819,911	3,275
Cost	$8,426	$7,524	$210	$31,725	$2,691	$3,540	$2,331	$3,545,668	$3,880
Goatskins, number	382	975			123			30,390	5,675
Cost	$165	$538			$43			$15,336	$3,270
Sheepskins, number	3,471	12,249		700	16,135	6,400	2,177	66,847	30,250
Cost	$1,398	$3,339		$575	$5,182	$3,080	$648	$57,430	$10,670
All other skins, number	434	120		115	792	500	608	150,382	7,250
Cost	$245	$125		$215	$881	$200	$186	$333,830	$3,750
Tanning materials—									
Hemlock bark, cords	846	10		4,990	15	400	8,445	177,628	
Cost	$3,397	$140		$30,000	$45	$2,400	$49,794	$1,070,780	
Oak bark, cords	37,050	380	8		73,646		69,286	770	
Cost	$209,583	$1,410	$16		$468,333		$805,534	$8,010	
Gambier, bales		251	4	163		4		41,726	197
Cost		$2,280	$48	$1,198		$25		$268,567	$1,345
Hemlock bark extract, barrels	28	62		97			21	51	36
Cost	$373	$1,051		$1,200			$260	$510	$603
Oak bark extract, barrels	30	75			10		394	5	103
Cost	$390	$1,356			$89		$4,990	$60	$627
Quebracho, barrels or bales					421			1,692	
Cost					$5,396			$21,678	
Sumac, tons		2			6			247	
Cost		$90			$233			$12,904	
Chemicals	$1,779	$593	$10	$30	$2,002	$600	$3,868	$124,653	$305
All other materials used in tanning	$4,244	$391	$750	$1,012	$10,390		$9,314	$84,911	$927
Currying materials—									
Purchased rough, sides				225				32,640	
Cost				$1,012				$53,369	
Rough leather, sides				225				11,840	
Cost				$1,012				$40,029	
Rough grains, sides									
Cost									
Rough splits, sides								20,800	
Cost								$13,340	
All other rough leather, sides									
Cost									
Oil, stearine, degras, tallow, and all other materials used in currying	$8,347	$2,417	$327	$10,188	$11,166	$1,760	$15,676	$699,333	$1,485
Fuel	$4,344	$243	$65	$2,791	$7,513	$221	$5,441	$112,393	$1,291
Rent of power and heat	$50				$12				
Mill supplies	$3,097	$25	$17	$279	$4,611	$20	$3,523	$17,619	$225
All other materials	$6,812	$243		$1,600	$12,062	$110	$4,568	$67,755	$120
Freight	$58,242	$875		$1,937	$72,931	$645	$42,663	$150,553	$940
Products:									
Total value	$2,802,117	$76,508	$5,863	$365,099	$4,716,920	$32,605	$3,210,753	$20,074,373	$44,877
Sold in the rough, sides	211,749	3,000		102,200	128,378		156,034	816,809	
Value	$557,948	$450		$160,300	$489,642		$447,171	$377,726	
Rough leather, sides	211,749			29,200	78,882		155,582	9,384	
Value	$557,948			$93,800	$274,036		$445,821	$30,544	
Rough grains, sides				5,500				5,500	
Value				$16,500				$12,500	
Rough splits, sides		3,000		5,500	23,000			801,925	
Value		$450		$3,000	$7,984			$334,682	
All other rough leather, sides				62,000	26,496		452		
Value				$47,000	$207,622		$1,350		
Sole leather, sides	205,942	1,022	600		409,166		363,954	1,630,988	25
Value	$1,086,284	$3,752	$1,975		$2,189,099		$1,742,354	$4,500,714	$125
Oak, sides	205,942	490	200		333,366		195,874		25
Value	$1,086,284	$1,583	$375		$1,836,629		$1,107,080		$125
Union, sides					75,800		167,745		
Value					$352,470		$633,944		
Hemlock, sides		532	400				335	1,628,888	
Value		$2,169	$1,600				$1,330	$4,491,748	
Chrome, sides								2,100	
Value								$8,966	

[1] Includes establishments distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]
Products—Continued.									
Total value—Continued.									
Upper leather, other than calf or kip skins	$7,315	$2,764	$2,475	$186,378	$11,017	$21,000	$10,209	$4,242,258	$1,000
Grain, satin, kangaroo, etc., side leather, sides	3,655	2,400	1,160	55,101	5,812	8,400	5,048	1,308,648	225
Value	$7,265	$2,500	$2,025	$128,551	$10,527	$16,800	$10,206	$3,303,777	$600
Finished splits, number	.....	.....	1,000	55,101	250	8,400	.....	979,638	.....
Value	.....	.....	$400	$57,787	$113	$4,200	.....	$522,361	.....
Patent and enameled shoe leather, sides	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsehide, sides	20	184	20	20	177	.....	1	227,026	125
Value	$50	$264	$50	$40	$377	.....	$3	$416,120	$400
Calf and kip skins, tanned and finished, number	6,494	400	210	400	2,594	3,120	2,556	2,797,925	775
Value	$11,753	$730	$400	$600	$4,434	$3,900	$4,777	$4,862,420	$2,250
Flesh finished, number	5,169	150	60	400	2,569	720	2,056	413,657	225
Value	$9,703	$240	$150	$600	$4,354	$900	$3,977	$760,170	$550
Grain finished, number	1,325	250	150	.....	25	2,400	500	2,379,098	550
Value	$2,050	$490	$250	.....	$80	$3,000	$800	$4,092,334	$1,700
Patent and enameled, number	.....	.....	.....	.....	.....	.....	.....	5,170	.....
Value	.....	.....	.....	.....	.....	.....	.....	$9,416	.....
Goatskins, tanned and finished, number	382	975	.....	.....	23	.....	.....	30,471	4,675
Value	$305	$886	.....	.....	$24	.....	.....	$25,117	$4,275
Black, number	362	400	.....	.....	11	.....	.....	21,931	175
Value	$291	$330	.....	.....	$12	.....	.....	$18,637	$125
Colored, number	20	575	.....	.....	12	.....	.....	8,540	4,500
Value	$14	$556	.....	.....	$12	.....	.....	$6,480	$4,150
Finished leather	$929,849	$26,332	$1,000	$4,291	$1,336,835	$4,150	$953,012	$4,702,191	$30,987
Sheepskins, tanned and finished, number	3,471	12,249	.....	700	16,235	6,400	2,106	46,610	20,250
Value	$1,756	$5,657	.....	$900	$10,790	$2,650	$980	$23,904	$12,440
Belting leather, sides	157,832	200	.....	.....	263,107	.....	95,052	8,500	.....
Value	$732,800	$800	.....	.....	$1,224,821	.....	$431,710	$38,500	.....
Harness leather, sides	53,105	5,165	230	575	26,350	.....	95,720	961,966	840
Value	$195,263	$19,875	$1,000	$3,311	$94,386	.....	$520,322	$4,194,372	$3,547
Carriage leather, hides	.....	.....	.....	.....	.....	.....	.....	31	.....
Value	.....	.....	.....	.....	.....	.....	.....	$93	.....
Trunk, bag, and pocketbook leather	$30	.....	.....	.....	$2,150	.....	.....	$102,650	.....
Bookbinders' leather	.....	.....	.....	.....	$4,688	.....	.....	.....	.....
Leather for manufacture of gloves	.....	.....	.....	$80	.....	$1,500	.....	$342,672	$15,000
Furniture leather, hides	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other leather	$145,459	$40,214	.....	$300	$399,846	$1,500	$464	$809,651	$3,010
All other products, including by-products, offal, etc	$48,444	$1,050	$13	$9,170	$52,428	$2,080	$51,556	$533,176	$174
Amount charged for tanning or currying for others	$14,760	$330	.....	$4,060	$233,595	$25	$1,220	$21,120	$3,056
Custom work, stock tanned or finished for others:									
Estimated value in condition received	$37,660	$670	.....	$17,618	$740,492	$50	$2,060	$49,705	$5,396
Estimated value after being tanned or curried	$52,462	$1,080	.....	$21,695	$974,524	$75	$8,549	$74,165	$9,440
Tanned—									
Hides, number	8,810	515	.....	40	99,609	20	959	7,202	1,182
Estimated value in condition received	$33,596	$670	.....	$43	$740,234	$50	$1,715	$44,183	$4,521
Estimated value after being tanned or curried	$47,415	$1,080	.....	$70	$973,984	$75	$2,953	$65,765	$8,025
Skins, number	2,025	.....	.....	15,180	237	.....	295	5,570	875
Estimated value in condition received	$4,025	.....	.....	$17,575	$200	.....	$345	$5,522	$830
Estimated value after being tanned or curried	$5,040	.....	.....	$21,625	$375	.....	$596	$8,400	$1,355
Curried—									
Sides, number	.....	.....	.....	.....	40	.....	.....	.....	30
Estimated value in condition received	.....	.....	.....	.....	$80	.....	.....	.....	$45
Estimated value after being tanned or curried	.....	.....	.....	.....	$140	.....	.....	.....	$60
Splits, number	.....	.....	.....	.....	.....	.....	.....	.....	.....
Estimated value in condition received	.....	.....	.....	.....	.....	.....	.....	.....	.....
Estimated value after being tanned or curried	.....	.....	.....	.....	.....	.....	.....	.....	.....
Skins, number	6	.....	.....	.....	25	.....	.....	.....	.....
Estimated value in condition received	$5	.....	.....	.....	$12	.....	.....	.....	.....
Estimated value after being tanned or curried	$7	.....	.....	.....	$25	.....	.....	.....	.....
Comparison of products:									
Number of establishments reporting for both years	41	9	2	6	61	1	44	35	8
Value for census year	$2,802,117	$60,164	$2,738	$102,336	$4,610,846	$26,400	$2,869,892	$17,518,595	$44,877
Value for preceding business year	$1,995,615	$48,469	$3,100	$114,210	$4,326,000	$30,000	$2,363,899	$14,915,420	$39,240
Power:									
Number of establishments reporting	18	1	2	7	27	2	20	38	6
Total horsepower	864	12	30	263	2,244	18	1,713	7,819	63
Owned—									
Engines—									
Steam, number	28	1	2	5	45	1	39	87	5
Horsepower	835	12	30	200	2,142	10	1,713	6,656	63
Gas and gasoline, number	1	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower	5	.....	.....	.....	.....	.....	.....	.....	.....
Water wheels, number	3	.....	.....	4	5	1	.....	1	.....
Horsepower	21	.....	.....	63	40	3	.....	20	.....
Electric motors, number	.....	.....	.....	.....	6	.....	.....	56	.....
Horsepower	.....	.....	.....	.....	50	.....	.....	1,143	.....
Other power, number	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rented—									
Electric, horsepower	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other kind, horsepower	3	.....	.....	.....	12	.....	.....	.....	.....

[1] Includes establishments distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

TABLE 17.—LEATHER, TANNED, CURRIED, AND FINISHED, BY STATES: 1900—Continued.

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]
Power—Continued.									
Furnished to other establishments, horsepower					100			12	
Establishments classified by number of persons employed not including proprietors and firm members:									
Total number of establishments	44	11	4	8	65	3	46	42	8
No employees	19	2	1	1	14	1	23	5	1
Under 5	16	8	3	4	33	2	11	5	5
5 to 20	3	1		1	4		2	6	2
21 to 50	2			1	5		3	6	
51 to 100	1			1	7		5	5	
101 to 250	2				2		2	5	
251 to 500								3	
501 to 1,000	1							1	
Over 1,000								1	

[1] Includes establishments distributed as follows: Arizona, 1; Iowa, 1; Kansas, 1; Nebraska, 2; South Dakota, 2.

HISTORICAL AND DESCRIPTIVE.

In dealing with leather (the basis of all the various manufactures which are given in detail in this report), one of the most important materials in industrial economy is considered. As to its antiquity, there are no records so old or legends so lost in the mists of prehistoric times that they are not antedated by some process for preserving hides, analogous to our system of tanning.

With the advance of civilization new and varied uses were found for the product, until Doctor Campbell was led to say, in his Political Survey of Great Britain:

> If we look abroad on the instruments of husbandry, or the implements used in most mechanical trades, or the structure of a multitude of engines and machines; or if we contemplate at home the necessary parts of our clothing, breeches, shoes, boots, gloves, the furniture of our houses, the books on our shelves, the harness on our horses, and even the substance of our carriages, what do we see but instances of human industry exerted upon leather? What an aptitude has this single material in a variety of circumstances for the relief of our necessities, and supplying conveniences in every state and stage of life. Without it to what difficulties should we be exposed.

But the list of uses that have been found for leather has increased many fold since the good Doctor's time, while the methods in vogue for its manufacture show a remarkable advance over his day. In fact, to no industry, perhaps, have advanced scientific methods been more intelligently applied, and no business has shown greater progress during the past hundred years. Within that period machinery has been invented for the various stages of manufacture, so that the industry has been completely revolutionized as far as the mechanical part of the work is concerned. Chemistry has also contributed to lighten the labors of the tanner and enable him to produce a much greater variety of tannage than was possible before. In fact, the facilities for producing leather more expeditiously have kept up with the increased demand, while tanneries have become numerous in every section.

Genesis of American Leather Manufacture.—The tanning of hides and skins was undertaken in a commercial way at a very early date in the history of the American colonies. The tanner's trade was well represented among the early settlers of Massachusetts, 41 of the "Pioneers," as those who came over between 1620 and 1650 are called, being tanners by occupation. The majority of these, it is safe to say, established themselves in this business some time or other in the colony; so that eventually, as the records state, every village had at least one tannery. This, in fact, was necessary, as skins accumulated so rapidly that a law was passed in 1640 to the effect that "every hide and skin should be dried before it corrupts, and sent where they may be tanned and dressed." A forfeiture of 5 shillings for each hide and 12 pence for each skin was attached to this law.

While it is impossible to state with certainty when the first tannery was established in this country, the date is generally conceded to be about 1630, with the honors equally divided between Plymouth Colony in New England and the colony of Virginia. In the former, Experience Mitchell and Francis Ingalls, both of whom came to Plymouth in 1623,[1] established tanneries at Bridgewater and Lynn, respectively, about the year first named.

The site chosen by Mitchell for establishing his tanning business was named by him Joppa, in memory, doubtless, of the place mentioned in the Acts of the Apostles as the residence of Simon, the tanner, with whom the Apostle Peter is said to have lodged. The memory of Mitchell has been kept greener than that of Ingalls by a descendant, Seth Bryant, who reopened his ancestor's vats after a lapse of nearly two hundred years and carried on tanning in them for some time thereafter.[2]

Tanning is also said to have been set up in Massachusetts Plantation at an early date by John Glover, who had tanneries at Dorchester, probably not long after the Mitchell and the Ingalls ventures.[3]

[1] Seth Bryant in The Shoe and Leather Trade of the Last One Hundred Years, page 35.
[2] Ibid.
[3] Edward H. Dewson in The Tanning Industry of the South Shore of Massachusetts, page 5.

Changed Conditions in Massachusetts.—Roxbury, now a part of Boston, was noted as early as 1647[1] as a tanning center, the product of its vats going into all the surrounding country. Tanneries multiplied also along the south shore of Massachusetts, being used mainly for tanning ox, cow, and horse hides, calfskins, and sheep pelts. Oak bark was used chiefly, though some small-growth hemlock was utilized. The south-shore tanneries were successful until the shipbuilding industry depleted the forests of oak in their neighborhood, so that the supply of bark became so small as to necessitate their abandonment. The tanners in the northern part of the state were more fortunate in their nearness to the Maine, Canadian, and New York hemlock forests, which, when the railways were opened, gave them adequate supplies of bark. Joppa, Abington, and Weymouth, once notable for their tanneries, were, through force of circumstances, supplanted by Woburn, Winchester, Peabody, Newburyport, and other towns more favorably situated as regards the supply of tanning material. Meanwhile the industry was being developed in other sections than New England with the result that Massachusetts, which was among the first to engage in the tanning industry,[2] and where, not many years ago, one-third of all the leather was manufactured, is now rated as fourth in the list of states, reckoned by capital invested. The state has been in large measure superseded by the West and Middle West. Boot and shoe manufacture has taken the place once held by leather in this section, just as it followed the decline of the tanneries at Joppa, Abington, Weymouth, and the other important points along the south shore.

Later-day Tanners.—A stringent law was passed in 1646[3] in Massachusetts, forbidding the exportation of raw hides or unwrought leather, under a heavy penalty, which was made applicable both to the merchant and to the master of the vessel. As a result of this prohibition, leather became very plentiful in the colony; more so, it is said, than was the case in England, taking into consideration the difference in population. Of the large number of manufacturers who followed the "Pioneers," some utilized the old tanneries, while others struck out into new fields, where a plentiful supply of tanning material seemed to be better assured. The first incorporated company to engage in the business was, doubtless, the Hampshire Leather Manufacturing Company of Massachusetts. This concern, which had acquired several tanneries operated by Col. William Edwards and others, was established in Boston in 1809, with a capital of $100,000. The stock was owned principally by Boston interests, and the productive capacity of the various plants was 16,000 hides a year. The following year American tanners shipped 350,000 pounds of leather abroad.[4]

Though a census of this industry was taken in 1810, the published figures concerning leather can be considered as only an approximation to the truth. The total value of leather manufactures that year was probably not far from $20,000,000. The census returns make it over $2,000,000 less. In 1850 the industry had grown so that the output amounted to $42,932,528.

The Rude Appliances of Colonial Days.—Mr. Seth Bryant, the descendant of the pioneer settler, Experience Mitchell, has left an interesting account of the rude and simple methods employed by these early tanners. The recent uncovering of several vats by workmen excavating for the foundation of a business block near the Boston post-office, in the neighborhood known in early days as Tanners' Lane, has furnished new evidence of the crude appliances that were in vogue in the old Bay State up to the beginning of the last century. Mr. Bryant thus describes the tanneries with which he was familiar:[5]

> A few oblong boxes called vats, dimensions usually 4 by 7 feet, by 5 feet in depth, made of plank, were sunk in the ground. A shed was erected, often open toward the south. Beneath its shelter the preparation of the hide for the bark was made. This consisted of soaking and rinsing, removal of particles of flesh, and treatment with lime for the removal of the hair.
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> A bed of heavy timber, two or three feet in width, was laid, forming a circle twenty or more feet in diameter. A spindle in the center supported a wooden shaft that extended horizontally beyond the outer edge of the bed. It passed through the center of a round millstone, set on edge, that stood on the circular bed before mentioned. The stone weighed one thousand or more pounds. To the end of the shaft that projected beyond the stone, a horse was attached. As he walked slowly around, the stone was made to travel on its bed, crushing the pieces of bark that were placed in its path. Often the tanner's son walked behind the horse, rake in hand, drawing from or upon the bed the crushed pieces, to be again and again crushed by the stone on its weary round. One cord a day was thus macerated. The pieces were drawn forward again and again onto the path, and when sufficiently crushed, the fine particles were shoveled into a heap. A sprinkling of bark was thrown upon the bottom of the vat; one side was carefully laid upon it, another sprinkling was thrown upon that, and so on, in alternate layers of half-sides, or sides, and tan bark, until the vat was nearly filled. Water was then run in.
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> Generally three times or more, at intervals of one, two or three weeks, the hides were taken up, the spent tan removed, and fresh bark applied. The last time it was suffered to remain indefinitely. The vats were covered with planks and six to twelve inches of spent tan thrown upon them. If this operation were performed in the fall of the year, the contents of the vat remained undisturbed until the following spring, when they were taken out thoroughly tanned.
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> In those days the hides, whether intended for sole or upper leather, received the same general treatment in the initial processes. The heavier and thicker hides were selected for sole leather

[1] Edward H. Dewson in The Tanning Industry of the South Shore of Massachusetts, page 6.
[2] R. H. Foerderer in One Hundred Years of American Commerce, page 495.
[3] Edward H. Dewson in The Tanning Industry of the South Shore of Massachusetts, page 1.
[4] R. H. Foerderer in One Hundred Years of American Commerce, page 495.
[5] Edward H. Dewson in The Tanning Industry of the South Shore of Massachusetts, page 2.

and harness, and given longer time in the bark. If intended for sole leather, they were rolled, in order to give them smoothness and solidity. In its crudity the rolling apparatus was a fitting match for the bark-crushing machine. Briefly described, it was a wheelbarrow with a very broad wheel, which was loaded with stones or weights. The leather was placed on a smooth platform, and the barrow trundled back and forth upon it.

Other devices as crude as those described were employed in the handling of the leather subsequent to its leaving the vats, until, one by one, they were superseded by the machines invented from time to time to take their places. The early tanners made harness and shoe leather. The making of harness, and possibly of shoes, appears to have been practiced in a small way in connection with tanning, for in 1633 the General Court forbade tanners to carry on the shoemakers' trade, and vice versa, in order to prevent deceit in tanning leather.

Skins for Manufacturing Purposes.—Each species of skin has its own peculiarities. In some there are long fibers, either interlaced like lattice work, or running in parallel rows, or the fibers may be very short; and upon these formations depend the strength, flexibility, and toughness of the leather. Sheepskin has larger fibers than any other material used in the manufacture of shoes, but as they occur in parallel lines, especially under the legs and at the flanks, this kind of skin does not furnish a particularly strong leather; it is quite flexible, however, and excels all other material for trimmings. It may be finished to resemble closely many other varieties of leather, and often requires expert knowledge to distinguish the difference. It is almost universally in demand for fancy work, pocketbooks, traveling bags, and similar articles manufactured from leather, as it will absorb any color and may be given the most delicate shades. For shoe leather it does not give satisfaction, and only the cheaper grades of shoes are made from it.

Goatskin is the next higher grade of stock. It resembles sheepskin in many particulars, but outranks it in quality. The fibers are shorter and are generally crisscrossed or interwoven. This formation gives the grain of the leather a far greater degree of strength and qualifies it for use even for vamps in men's wear. Having a finer and firmer tissue, its durability is much greater than that of sheepskin. In the shoe trade it was formerly used only for tops and quarters in men's wear, and for slippers and low cuts for women and children, but under various styles of tannage and finish it has now usurped, to a large extent, the place in the finer class of men's wear once held almost exclusively by calfskin. This is due largely to modern improvements in tanning and finishing.

Goatskins of Commerce.—Two classes of animals furnish the goatskins of commerce—the wild and the domestic. The latter are found in all parts of the world, especially in mountainous regions, and the wilder the country the better they appear to thrive. Goatskins are brought from British East Indies, France, Brazil, Mexico, Africa, China, South America, and various other countries. A notable increase in the imports of these skins has taken place of late, the figures for 1900 being 81,998,818 pounds, or 75 per cent in excess of those of 1896. An increase of 22 per cent is noted in the price per pound in 1900 as compared with 1896.

The different species are mostly called by the names of the districts in which they were produced—as, for example, "Tampico," "Curaçao," etc. Once a year the goat sheds its hair, and its skin is in best condition when the new crop of hair reaches full growth. Climatic conditions affect the quality. Cold weather tends to make the fiber coarse.

Uses of Calfskin.—Calfskin is considered the best material for men's and boys' wear. When it is finished on the grain it furnishes cuts for all parts of the shoe, but when finished on the flesh side, it is used only for vamps, quarters, and tips. For this purpose it is unequaled. It is as firm and solid as any other stock in use, and may be crimped to any desired form without becoming inflexible and without wrinkling. With the exception of the flanks, which are inclined to looseness, all parts of this stock have a tough surface capable of withstanding a great amount of wear.

Other Skins that are Utilized.—Until within a comparatively few years, sheepskins, goatskins, and calfskins furnished the only kinds of leather used in the manufacture of the finer grades of footwear. They no longer hold this distinction, however, since recent discoveries and improvements in the art of tanning have made it possible to introduce a number of other species of skins. Among these may be mentioned kangaroo skins, porpoise hides, seal skins, the hides of alligators, and horsehides. This last class of leather is known on the market as "cordovan," because it was first successfully tanned in Cordova, Spain. It was afterwards introduced into Germany by a tanner who was particularly successful in his treatment of the highly prized article. Certain parts of South America, where wild horses are captured in large numbers by the natives of Guaicho, supply the world with hides for leather of this kind. Only a part of the hide of the horse, taken over the rump, is used for leather. It is an oval piece about 3 feet long and only half as wide, and possesses remarkable strength, nearly twice that of calfskin. The fiber of which its epidermis is composed is so tightly interlaced that it makes the leather more nearly waterproof than that of any other land animal. Cordovan leather is finished in imitation of several other kinds of stock, and is even produced in colors. Tan and russet are made of horsehide.

The use of kangaroo skin in the shoe trade is of comparatively recent date. Like the horsehide, it has a strong, flexible texture, which makes it almost impervious to water. The grain is fully twice as thick as that

of any other skin of its size and weight, while the thickness of the whole skin varies greatly, according to the size of the animal.

Another material that is comparatively new in the leather market is the hide of the alligator. In the case of Central and South American reptiles, which furnish so much material for leather, only the skin taken from the under side can be used. That which covers the back is composed of hard brittle scales. New Orleans was the first place to attempt the tanning of this stock, half a century ago, but the experiments were finally given up as impracticable, leaving Massachusetts tanners to place the industry on a paying basis. Experiments were started in the old Bay State some twenty years after the process had been abandoned in New Orleans.

Beginning of Rapid Tanning.—Nearly a century ago the necessity was apparent for reducing the time consumed—then from twelve to fifteen months—in tanning hides, and efforts were made to accomplish this end, as is shown by the following citation from the Leather Manufacturer for the month of August, 1898:

"As early as 1825 tanners were giving their attention to systems or methods which should quicken the tanning process. Some of the enterprising ones were looking about them and endeavoring to shorten the tedious old-time processes. John Burridge, of England, was one of those tanners who studied the business of producing leather, and the trade of the early years of this century were much indebted to him for the results of his careful study. In 1825 he wrote the London Journal of Arts, of which writing the following is an extract:

"I have discovered the means of ascertaining the relative degrees of strength in oak-bark liquors. I have also discovered that the simple and regular application of oak-bark liquors, etc., to hides will effectually tan sole leather in three or four months (according to the thickness), providing you can commence at 3 degrees and gradually increase the strength of the liquor thrice a week up to 15 or 20 degrees, taking care not to apply strong liquors till the leather is nearly tanned. There can be no theory prescribed as to the exact time when the hides may be forced with advantage; practice only can master in this nice point. The simple instrument I use is a hydrometer, which I have surnamed a barkometer; without which I should be more in the dark than brewers without saccharometers or thermometers.

"I have also found means, by the constant use of pumps, to extract all the virtue from oak bark in ten days, which generally lies in common tanyards two or three months. My hydrometer proves that I throw away no tanning. The execution of this process, with daily care, produces additional weight in leather over the standard. Tanners generally require twelve months to tan hides that may by my system be done in three months with perfect ease. My process will also produce one-fifth more leather from similar hides and in one-quarter of the usual time. Is this not a plain proof that hides lie rotting, rather than tanning, after four months? Many tanners immerse crop hides in bark from two to three months, during which stage I tan the stoutest hides in the kingdom without more than the usual quantity of bark, because it is generally acknowledged that four or five pounds of oak bark (according to its quality) will tan one pound of leather."

It would seem by the above that Mr. Burridge was one of the pioneers in introducing the barkometer, and it would seem also according to the above letter that the name of "barkometer" for the hydrometer in testing tan liquors might have originated with Mr. Burridge. Seguin, a Frenchman, half a century earlier brought out new ideas in the art of tanning, which were improvements upon the methods in vogue in his time. Since the days of Seguin and Burridge many improvements and many failures have been recorded in the direction of quicker tanning. But "quick tanning" has come to be a recognized fact in practice."

Tanning of Sole Leather.—A paper read in February, 1898, by J. H. Yocum, before the New York section of the American Chemical Society, gives a very clear idea of the general methods pursued in the tanning of sole leather.

The general application of chemistry to industrial enterprises, which has been going on during the past few years, has not failed to influence the leather industry. The trade has been rejuvenated, and the methods of only a few years past are obsolete. The manufacture of leather embraces a number of subtrades, in which practice differs widely. About the only thing they have in common is the raw hide for a beginning, and this varies from the delicate lambskin for ladies' gloves to the heavy oxhide for men's shoe soles. The sole-leather tanners can no more make glove leather than a blacksmith can make watches. It may be inferred from this that progress in one of these subtrades is not necessarily followed by progress in the others, and in any consideration of the subject each branch must be taken up separately.

The system pursued at present in the tannage of sole leather is the result of an evolutionary process, depending upon the selective ability of the tanners themselves. No scientific discoveries have helped them, and the basic principles of their art have never received attention. This state of things is due to several causes. In the first place, in an art which has attained a high degree of perfection through the endeavors of generations of practical workers, we are apt to accept the results thus achieved without questioning the principles involved; and, in the second place, the raw materials—hide and tannin—being organic bodies of unknown or of very complex nature, there is no foundation for theories of their mutual interactions till more knowledge of them is obtained.

The methods that have resulted from the evolutionary process serve admirably for the purpose, and by means of them the cost of production is kept so low that it is not an inviting field for the prospecting scientist. In preparing the hide for tannage it is first brought to a natural state by soaking in water; that is, the salt is removed and the hides soaked and milled until they are soft and pliable, and free from blood. The water in which this is done is kept below 70° F., if possible, and should be soft. When the hide has resumed its natural state, the process of loosening the hair is begun. Green hides are limed, and dry hides are sweated, for this purpose. The process of loosening the hair by means of lime consists in subjecting the hide to the action of a

milk of lime, from three to six days, at a nominal temperature. The caustic lime dissolves the hair sheath, thus permitting the hair to be easily removed. Sulphide of soda, as an assistant to the lime, has come into use lately, but on account of its cost has not obtained a very wide use. When used, its action is to form caustic soda and sulphide of calcium. The latter acts as a solvent for the hair itself, and facilitates its removal. Sulphide of arsenic acts in an analogous manner.

Sweating of Dry Hides.—Dry hides are sweated by being hung in a closed room, the temperature of which is kept at 70°. Incipient decomposition sets in and attacks the hair sheath, liquefying it, and thereby loosening the hair. This operation is a very delicate one and requires the closest attention, for if the decomposition goes too far it injures the hide itself. Sometimes the hides are put into a milk of lime after coming out of the sweats, to stop the reaction before injury is done. The beam work follows, removing the hair and superfluous flesh, and working out the lime and dirt. This mechanical process is accomplished both by hand and by machines, the former being the general method.

Bates and drenches are no longer used in making sole leather, except in special cases, and the beam house and preparatory work has been so simplified and cheapened that there is little room for improvements. These necessary preliminaries require from fifteen to twenty days. There are three general varieties of sole leather made in this country—oak, hemlock, and a combination of both, known as union. Hemlock is produced from both dry and green hides, while the other two are generally made from green hides.

Oak, Hemlock, and Union Leathers.—Oak bark gives a deposit of elligi-tannic acid on the leather, called "bloom," and oak leather is known as "scoured" or "unscoured," depending upon whether this bloom is removed or not. Belting butts are sold with the bloom on. Hemlock is of two varieties, acid and non-acid, the distinction being that in the first, sulphuric acid is used to swell the hides, thus producing a firmer leather. Acid is of two kinds, limed acid (made from green hides) and sweat acid (made from dry hides).

Variations in the process of tannage occur in each kind, but in a general way oak, union, and non-acid hemlock are put through the same processes, being treated first with weak solutions of tannin, gradually increasing the strength and finishing out of quite concentrated ones, the time required to tan varying from one hundred and twenty to two hundred days. Acid hemlock is first colored in a dilute solution of tannin and then put into a sulphuric bath of 10 to 30 per cent, remaining there from twenty-four to forty-eight hours. The acid swells the hide to an abnormal thickness. It is then put into quite strong tannin solutions and finished, as the other varieties are, in about one hundred and sixty days. These tanning solutions are made in the leach house and are known as liquors, the specific gravity of the most concentrated being 1,060, containing from 5 to 6½ per cent tannin.

All varieties when taken out of the vats are washed or scoured, oiled and dried, then dampened and rolled under considerable pressure, redried, and are ready for sale. Some manufacturers have adopted chemical bleaches, such as sugar of lead, oxalic acid, ammonia, sal soda, etc., but, except where great care is exercised, the results are not satisfactory. Peroxide of soda has been tried, but it is not a commercial success. Glucose, barium chloride, and salt are used sometimes as weight-giving materials, but adulterations of this kind are not common. This general view of sole-leather manufacture is necessary, in order to understand why present methods so exactly meet requirements and why improvements have been confined to minor details and necessarily must remain so.

Cost Relation between Hide and Finished Product.—Sole leather is always sold by weight, and the cost of the hide is from 50 to 70 per cent of the cost of the finished product. The object of the tanner is to make as many pounds of leather from a given weight of hide as possible. From 60 to 80 pounds of leather is obtained from 100 pounds of green hides, or 150 to 185 pounds from 100 pounds of dry hides.

The process of vegetable tannage is no doubt a chemical one to a certain extent, but after the purely chemical reaction between the hide and tannin has taken place the product is capable of a further absorption of tannin. The point at which chemical action ends and physical absorption begins has not been determined. It is safe to say that leather may contain 20 per cent tannin or 50 per cent tannin, and in both instances be thoroughly cured and perfectly tanned. There is, however, a minimum limit at which the hide treated with tannin is leather, and this limit is satisfaction of the purely chemical affinity of the hide for tannin.

The one object of the tanner is to swell the hide and satisfy its chemical affinity for tannin in weak liquors. If at first strong liquors are used, an almost impervious tanned layer forms on each side of the hide, retarding penetration of the tan liquor and preventing the swelling action of the acids present, so necessary for obtaining the maximum weight of leather therefrom. This swelling or plumping is due to the vegetable acids naturally formed by the fermentation of the sugars in the tanning liquors. In acid hemlock the plumping is done first in sulphuric acid, and hence strong liquors are used from the start. After the chemical affinity of the hide is satisfied and the hide plumped, so far as the natural acids will effect this, the secondary operation of weight-making commences, the concentration of liquors is increased, and as much tannin is put in solution in the leather as the plumpness and selective action of the hide will take.

Element of Time in Tanning.—The element of time seems to be essential for the proper absorption of tannin as a dye in sufficient quantities to give the maximum weight. Tannin is the only material that has this property to any considerable extent, and tannins from different sources vary so that some tannin can not be used to obtain weight. The whole process is an economical one. The tannin does not change materially and is almost completely recovered from the solutions. Labor costs are low; the only disadvantage is the loss of time and the consequent loss of interest. Processes have been brought forward to obviate this, but as yet none have been successful. The Durio process, which consists in agitating the hides in a wheel in concentrated liquors, was widely heralded. The cost in proportion to yield has made it impracticable in the United States, though several foreign factories are using it with some success.

Glossing Sole Leather.—Sole leather is finished by glossing with brass rolls. The leather is partially dried in a dark, dry room. The machine for rolling the leather consists of rolls of brass about six inches in diameter and about six inches in length. These work into roller beds or concaves, which are also of brass and planed to a true radius of the vibrator or pendulum of each machine. Pressure of rolls is imparted by means of the lever connected with the pendulum of each machine, and is regulated by the foot of the operator, who holds a side of sole leather in his hands, which is shifted from time to time as the polishing process proceeds. After the first rolling it is again placed in the dark, dry room and subsequently rolled a second time, and in some cases even a third time. The principle upon which the sole-leather rollers work was discovered in 1836, and, while improvements on machines have since beenmade, the general principle has not been changed.

Chrome Tannage.—Within a few years a good deal of attention has been given to what is termed chrome tannage, and vast sums of money have been expended toward developing the process. It is unquestionably the tanning agency of the present day for upper leather. The process in itself is not so new as the first patent, which was taken out in the United States by Christian Hinzigerling in 1880, would seem to indicate, since ex periments are said to have been made as early as 1853. During the last five years the leather industry has been very rapidly adopting the chrome process.

There are two processes of chrome tannage commercially recognized—the one and two bath methods, so called. The former is in principle a neutral solution of chromic oxide, or the basic acids of chrome or chromium. It is more simple in application than the two-bath process, which latter consists of bichromate of potash, chromic or muriatic acid, followed by a reduction bath of hyposulphite of sodium or sulphureted hydrogen, or some modified combinations with hyposulphites.

Chrome-tanned leathers do not possess the coloring properties of bark-tanned leathers. Chromium dyes were not found suitable in practice, and it was at first necessary to mordant the leather with tannin. Different processes are now employed.

At first only sheep and goat skins were tanned by the so-called chrome process. To-day the process is used on calf, kid, and cowhide leathers. Some attempt has been made to apply the tannage to sole leather, but as yet without commercial success. Leather tanned by the chrome process is exceedingly soft and pliable, of close texture, and may even be placed in boiling water without destroying its usefulness. The chrome process of making leather is very rapid as compared with the old-time bark tannages. After the preliminary operations of preparing the skins of hides, the time required for converting them into leather is but a question of a few hours.

Patent and Enameled Leathers.—The making of patent and enameled leathers for shoe purposes is a comparatively new industry in the United States. In the past, excellence in this production has rested with Germany and France, and they have held the trade unquestioned for nearly a century. Until a recent date, every attempt to produce patent and enameled leathers for shoes in the United States has proved a failure. Fortunes are said to have been lost in the effort to produce goods having any apparent advantage, in respect of quality or cost, over the foreign article.

In the preparation of enameled leather, a foundation coat of lampblack mixed with linseed oil has been laid on the flesh side of the skin since the infancy of the industry in Europe. This "ground," or "filler," as it is called, is applied in the following manner: The first as well as the other coats are put on in a warm, but not hot, condition, for if it were put on hot it would burn the leather. This is spread on the skin as evenly as possible. After this process the skins are hung up to dry in a temperature ranging to 110°, and are thoroughly dried in three or four days. Then the surface is smoothed, either by machine or hand, ground pumice stone being spread on the skin, which has been moistened with a sponge. This is continued until the first coat is smoothed down, nothing but the virtual root of it remaining, and the process is repeated with four, five, or six coats, all being ground down until the surface is in perfect condition. The skins are then blackened with a fluid black mixed with turpentine, etc., and hung up to dry again. After the skins have been allowed to settle, being laid in a pile for about a month's time, or longer if possible, the leather is tacked on a frame and is given a brush coat of varnish. A baking follows in an oven subjected to heat (not so great as to weaken the fiber), and after about three days, the heat having been raised gradually, the leather is taken out on a sunny day and placed in the sun for ten hours in order to harden the

varnish. The sun and the air oxidize the varnish, after which the stock is finished. This process is still used in Europe, and also to a large extent in the United States with bark-tanned leather.

All chrome patent leather is varnished on the grain or hair side. Chrome-tanned leather is very stretchy and flexible, just the reverse from the bark-tanned. The bark or vegetable tannage makes more solid leather. The bark-tanned leather must be thoroughly washed in a so-called "tumbling wheel," so as to remove all the surplus tannage from the grain and to remove also the fibrous construction, in order to give the leather flexibility. The vegetable tannage, however, is virtually a process of petrifaction, and unless this tannage is expelled as much as possible the skin will become harder, and it is then suitable for sole leather; while leather freed from the surplus tannage will become flexible to some extent, though much less so than chrome-tanned leather, and better suited for an easy-wearing shoe. There is danger, however, in applying the japan to chrome-tanned leather, for if proper judgment is not used in making the leather, it will become too flexible, and more stretchy than the linseed-oil varnish used in its preparation.

As the manufacturers of the United States have been eminently successful in making this leather, and have excelled the manufacturers of all other countries, it is obvious that the mode of procedure differs from that undertaken elsewhere. The old-style stock was made by covering the flesh side with a heavy coating of material which was very brittle, lampblack being a large component part of the same, while in the chrome process the grain side of the stock is used for the enamel, and other methods follow which are guarded very carefully by those engaged in the business.

Success depends upon making the application on the surface of the grain, first, absolutely adhesive, so that the varnish will not peel, and second, as thin as possible, in order to give it the same proportion of flexibility as the grain and fiber possess. Success in this direction by manufacturers in the United States is the reason why chrome patent leather has been successfully introduced.

There is, however, a doubt whether leather prepared by the chrome process can properly be called "patent leather," in the general acceptation of the term, because the proper definition of patent leather, for a hundred years or more, has been a leather without flexibility and with a very high luster, higher in every respect than the leather made under the chrome process. Be this as it may, it is generally believed that leather prepared by the new process will largely supersede leather prepared under the old, particularly for the making of shoes, as the public has already, to a large extent, recognized that much more comfort can be secured in wearing shoes made from leather made by this process, and there is not that liability of "cracking" which exists in the inflexible article; but the older method may be continued in the making of leather for harnesses, saddlery, and carriages.

Tanning of Goat and Sheep Skins.—It can be stated fairly that all regions of the world except North America are exporters of goat and sheep skins, and even Mexico furnishes skins in quantities to the markets of the United States. The principal shipping points from which skins are received by the American importers are London, England; Marseille, France; Naples, Italy; Salonica, Greece; Constantinople, Turkey; Hamburg, Germany; Riga, Russia; Aden, Arabia; Calcutta and Madras, India; Shanghai, China; Rosario, Argentine Republic; Pernambuco and Ceara, Brazil; and Payta, Peru. This list refers to skins taken from the animals and properly cured, so as to insure them from decomposition during their passage and until such time as the purchaser may see fit to begin their manufacture. These are admitted free of duty. There are also large quantities of both sheep and goat skins imported from Calcutta and Madras which have first been subjected to a native tannage. These are known commercially as "India tans" and are subjected to a duty of 10 per cent, as they are partially manufactured. It is only necessary to subject them to the finishing process, so called, when they are ready for the market.

When the kinds of skins first mentioned are received by the manufacturer they are placed in water and allowed to soak for three days, after which they are subjected to different softening processes, in order to restore them as nearly as possible to the condition they were in when first taken from the animal. They are then submerged in a lime-water solution, gradually strengthened from time to time, and left from ten to seventeen days, according to the nature of the skin or the temperature of the season, more time being required in winter than in summer. The object is to swell the hair cells, so that the hair can be easily removed. After this the skins are cleansed of all fleshy particles, thoroughly washed, bated, and worked to remove all foreign substances, and thus made ready for the next step, that of tanning.

Previous to the last quarter of the last century there had been no decided change for a great number of years in the method of tanning goatskins, but about that time various new methods were introduced, with varying success, until 1888 or 1889, when a number of manufacturers began tanning leather under a patent which had previously been issued to Augustus Schultz for tanning and tawing hides and skins. The process consisted of taking skins which had been prepared for tanning, as previously described, and subjecting them to a bath of bichromate of potash. When thoroughly saturated they were placed in a bath of hyposulphate of soda, which deoxidized the bichromate of potash and coated the fiber with a metallic salt, thereby preserving the gelatin of

the skin, instead of drying it up, as was the result with astringents, such as sumac and gambier, formerly used. This is the process now adopted by all manufacturers. When tanned the skin is of a bluish-green shade and can be colored as desired.

The process in detail is as follows: First, the skins are saturated with a solution of logwood liquor, after which they are submerged in a specially prepared liquid. When they are well colored, an emulsion of oil, water, and soap, known as "fat liquor," is given them, after which they are stretched and made as smooth as possible, either by hand or by machinery. They are then dried, either by the air or in specially prepared rooms where superheated air is drawn through by a system of power fans. They are then thoroughly softened, or "staked," as it is called, either by hand or machinery, when they are ready for the seasoning process. This consists in treating the grain surface with a light dressing. After this is dry the skins are ready to be glazed. In olden times a skin was glazed by being placed on an inclined hard-wood table. The workmen, using a glass of cylindrical shape, by much hard rubbing caused sufficient friction to produce a gloss; but now all factories use machines making 150 to 200 revolutions per minute, with an inclined bed upon which the pressure is regulated by means of springs. The friction which produces the gloss is made by means of a glass cylinder firmly clamped into the moving arm of the machine. Skins are usually glazed twice, and sometimes three times, according to the quality of work desired, after which they are measured and assorted for the market according to qualities and weights.

Currying and Finishing.—Currying is the step in leather making following the tanning process. The currier carries out a series of operations by which tanned leather (with the exception of sole leather) acquires the properties necessary for commercial use. The process, in principle, consists in softening and equalizing the leather, dressing, polishing, slicking, and carrying the work forward to the final finishing, the object of the various manipulations being to make the leather pliable and elastic. Different leathers are treated differently in detail, processes often being varied to meet changing conditions and demands, but they have a common aim, namely, to produce a marketable leather. Only currying in its broadest sense is here described.

Hides and skins tanned by any of the vegetable processes are technically known as "rough," "unwrought," or "crust" leather. A few years ago the trades of tanners and curriers were usually entirely distinct; but at present leather is generally tanned and finished by the same establishment, and those termed "rough-leather" tanners have largely passed away.

The tanned stock is often softened by being placed in a revolving "tumbler," or wash wheel, where it is so tumbled about in contact with water and some softening agency, like borax, for instance, that the fibers and adhering flesh are loosened. Sometimes this softening process is done in stationary tubs or vats. The currier also assorts the stock, selecting it for the purposes for which it is best suited. The heavier hides or sides, at some stage of tanning or currying, are split into two or more pieces and finished accordingly, the hair side made into "grain" leather of some sort and the flesh side into "flesh splits," or into some specially designated leather. When split more than once, the pieces taken between the grain and flesh are broadly termed "middle" splits. After splitting, the stock is sometimes retanned in mildly prepared liquors.

The art of leather making really belongs to the currier. The smooth-finished leather is termed "glove grain," or given some special name. "Pebbled" leather, or that with some roughened surface to imitate some special skin, or for special work, is finished on rolls of steel or metal, which have been cut or engraved to make an impression to meet the requirements of trade.

"Shaving" is the work done on leather to remove the fleshy particles remaining and to equalize the thickness. Mechanical shaving is a process of later years, and is to a large extent superseding hand shaving. The machines for this purpose are made with concave wheels or wheels with irregular blades to work as nearly as possible on the principle of hand shaving, with the object of producing the same results.

All vegetable-tanned leather has to be filled with grease to a certain extent, to keep it soft. This process is technically termed "stuffing," and is now more generally accomplished by mechanical means in a revolving drum of suitable dimensions. The interior of this drum is usually studded with protruding pins which, as the wheel revolves, carry the leather toward the top, allowing it to drop back into the "stuffing" compound. This compound consists of tallow, stearin, degras, and "brown" grease, in varying proportions, heated to proper temperature. The surplus grease is then removed, the leather "put out," or smoothed and stretched, and, at the present time largely by mechanical means, slicked, seasoned, and smoothed to receive the final blacking or colors.

Grain Upper Leather.—Upper leather may be made from either green-salted or dry hides. If from dry hides, the time given to soaking and the methods of softening while soaking, differ from those employed in tanning green-salted hides; as the former have to be milled and mechanically softened, while the latter have merely to be immersed in cold water. The soaking in one case may take three or four days, while in the other, five or six days are required. In this part of the process there has been but little change in many years.

During the process of soaking, if side leather is to be made, the hides are split from head to tail on the line of the backbone. When soaked, each hide is laid over

a cylindrical table or beam, and the meat and flesh are removed by hand with a knife made for the purpose; or this may be done by a fleshing machine—much the quicker process. A good fleshing machine saves the labor of four or five men and does the work well.

When prepared in this way the sides are strung together and thrown into vats containing lime water of full strength, to neutralize the grease that may be in them and loosen the hair. The sides are reeled from one vat to another occasionally for about six days, when the hair is easily removed in a machine or by hand, after which they are thrown into a vat of water and hen manure, called the drench, to remove all traces of lime. They are then worked over the beam to clean the grain and thrown into clear, cold water for an hour or two, when they are ready for the tanning liquor. This is made by leaching ground hemlock or oak bark, by processes similar to those used in making sole and belting leather, but the liquors for upper leather are made of less strength.

The hides are first immersed in very weak liquors which may, with good results, be a little sour. The reason for this weak or sour liquor is that it gives a good color to the grain without closing the pores of the hide, as would be done if strong liquors were first used. At intervals the sides are removed from weak liquors to stronger ones until, with from five to six changes in from twenty to thirty days, they reach the strongest. When about two-thirds tanned, the sides are taken from the liquors, partially dried, and prepared for splitting, which is usually done in a band-knife splitting machine, the sides being pressed through rollers against the moving band knife. The endeavor in this process is to leave the grain, or hair side of the leather, which is more valuable, of even thickness; and as the hides vary in thickness in different parts, the splits are left uneven and more or less ragged, and may have to be trimmed, while the grains retain the full size of the side.

The grain is now returned to the tannery to finish the process of tanning, which proceeds quite rapidly, as the untanned part of the leather has been exposed by the splitting and readily absorbs tannin from the liquor. This retanning may require from three days to two weeks, according as the leather is thick or thin. During the retanning the grains may be handled, i. e., hauled from the liquor and thrown back, or they may be stirred from time to time in vats fitted with paddle wheels, or both. They may also be treated for a few hours in tight revolving drums, or mills, with tanning liquors. Liquors for retanning may be either of bark, gambier, or sumac, or of the three combined.

When the grains are retanned the currying proces proper begins. The grains are first dried or pressed to the requisite degree of dampness, when they are put into a stuffing mill, which is similar to the tanning mill but fitted with holes through the journals, through which heat may be driven to warm up the mill before the leather is put in, and by means of which, grease and oil, called stuffing, may be inserted while the mill is running with the leather in it. Usually about 80 sides are thus stuffed at once, in from forty to sixty minutes. From the stuffing mill the leather is set out with stone and steel hand tools called "slickers," on hard-wood or stone tables, to make it smooth, after which it is hung up to dry. The drying takes from two to four days. When dry it is taken down, and the grain is prepared for blacking either by cutting it off with a thin, flat blade with a turned edge, which is pushed over the surface by a skilled workman, removing the top of the grain in small, thin, lace-like sheets, or by a weak solution of ammonia rubbed over the uncut surface to remove the grease from the outside and allow the coloring matter to penetrate the leather.

A black is produced over the grain by two applications—the first of logwood water, and the second of copperas water applied before the logwood application is dry. The leather is then hung up, and, when dry, is ready to finish. It may be finished into embossed or pebbled leather, or into smooth leather of several kinds, according as it has been stuffed for one or another. The amount and proportion of grease and oil used in the stuffing determine the finish that is to be made. In the finishing it is several times hung up to dry. The blacking and finish may be applied by machines or by hand, but the machines save about one-half of the labor. In many finishes glazing and rolling machines do work that can not be done by hand. Finishing grain leather requires from a week to ten days, most of the time being consumed in drying the sides in the several stages of the process. When the leather is finished it is measured in an automatic machine, or it may be measured with a frame divided into squares of one-fourth of a foot each, placed upon the side as it lies flat on a table. Grain leather is usually sold by the square foot.

Waxed Splits.—The splits are taken from the splitting machine as above described, trimmed and returned to the tannery where, being usually thicker than the grains, they require more time to retan. When tanned they are dried and stuffed in the same manner as the grains, but usually with a larger proportion of stuffing. After being set up, they are whitened, trimmed, blacked, and "slickered," treated to a coating of flour paste, set or glassed again, and given a finishing coat.

Splits are suitable for other finishes than waxing. Many are smoothed out and finished for innersoling, for which purpose the process is much simpler, as they require no grease and need only to be rubbed hard and smooth to make them good substitutes for inner sole leather. Wax upper leather differs from grain upper leather in that, like wax splits, it is finished on the opposite or flesh side, but it is similarly used as a substitute for calfskins in heavy and low-grade shoes.

BOOTS AND SHOES.

BOOTS AND SHOES.

By GEORGE C. HOUGHTON, *Expert Special Agent.*

Prior to the census of 1880 the factory manufacture of boots and shoes was included with that of boots and shoes, custom work and repairing, and comparative figures, therefore, are not available beyond that period. In presenting the statistics of the industry for the Twelfth Census it seems proper to state that the business for the year covered by this census is said by manufacturers to have been considerably below normal, due to a reaction following the exceptional demand of the previous year and the upward tendency of prices. Table 1 presents the leading statistics of the industry at the censuses of 1880, 1890, and 1900, with per cent of increase for each decade.

TABLE 1.—COMPARATIVE SUMMARY, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900	1890	1880	1890 to 1900	1880 to 1890
Number of establishments	1,600	2,082	1,959	[1]23.2	6.3
Capital	$101,795,288	$95,282,311	$42,994,028	6.8	121.6
Salaried officials, clerks, etc., number	7,843	[2]5,643	[3]	39.0	.....
Salaries	$7,757,749	[2]$5,707,931	[3]	35.9	.....
Wage-earners, average number	142,922	133,690	111,152	6.9	20.3
Total wages	$59,175,883	$60,667,145	$43,001,438	[1]2.5	41.1
Men, 16 years and over	91,215	91,406	82,547	[1]0.2	10.7
Wages	$43,301,430	$46,905,974	[3]	[1]7.7	.....
Women, 16 years and over	47,186	39,849	25,122	18.4	58.6
Wages	$15,068,726	$13,393,611	[3]	12.5	.....
Children, under 16 years	4,521	2,435	3,483	85.7	[1]30.1
Wages	$805,727	$367,560	[3]	119.2	.....
Miscellaneous expenses	$10,766,402	$9,217,519	[4]	16.8	.....
Cost of materials used	$169,604,054	$118,785,831	$102,442,442	42.8	16.0
Value of products	$261,028,580	$220,649,358	$166,050,354	18.3	32.9

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 10.)
[3] Not reported separately.
[4] Not reported.

Table 1 shows that from 1890 to 1900 there was a decrease in the number of establishments of 482, or 23.2 per cent. This is accounted for in a measure by the fact that there were included in the reports of the Eleventh Census, to what extent it is impracticable to ascertain, a large number of establishments doing contract work. This has been a peculiar feature of the shoe manufacturing business in certain sections of New England ever since the industry assumed the proportions of the factory system. Especially has this been the case in Haverhill and Lynn, Mass., though the returns of the Twelfth Census show that the number of such establishments is growing notably less.

The work of these contract shops consists largely in stitching or fitting, working the buttonholes, or heeling the shoes for manufacturers, who are thereby relieved of the expense of fitting up one or more departments; and in rush times these shops are also taken advantage of by those manufacturers who ordinarily do the work in their own establishments. In 1890 there were reported in the city of Haverhill, Mass., 74 shops doing contract work, against 49 in 1900; Lynn, Mass., had 64 in 1890, compared with 16 in 1900; and a similar ratio, it is reasonable to assume, followed in other places where such shops were located. At the Twelfth Census there was reported a total of only 78 contract shops—73 of them located in Massachusetts, 4 in New Hampshire, and 1 in New Jersey. These 78 establishments are included in the present total of 1,600 establishments; and after deducting the same from the 1,600, as shown in Table 1, there remains 1,522 legitimate shoe-manufacturing establishments in the year 1900. Undoubtedly there was a larger number of boot and shoe factories in 1890 than in 1900. Many of the smaller establishments which existed in 1890 have discontinued operations, the tendency being to consolidate the business into larger establishments.

The apparently abnormal increase of capital from 1880 to 1890 is due in part to the fact that a return of live capital was first called for at the census of 1890.

From 1890 to 1900 the average number of wage-earners increased from 133,690 to 142,922, a gain of 9,232, or 6.9 per cent; the total wages paid decreased from $60,667,145 to $59,175,883, a loss of $1,491,262, or 2.5 per cent; and the value of products increased from $220,649,358 to $261,028,580, a gain of $40,379,222, or 18.3 per cent. The improvements in machinery have so increased the capacity of shoe factories that fewer hands are necessary in turning out a given amount of work. To a considerable extent women have taken the place

of men in operating the lighter machines, while children now perform work that women were doing heretofore. As a larger portion of the work is done by these cheaper classes of workers, a reduction in the total wages paid necessarily follows. The reduction of total wages is also due to the fact that many boot and shoe manufacturers have found it more advantageous to purchase from cut-stock dealers outer soles, inner soles, taps, heels, etc., already prepared, and where formerly a considerable number of wage-earners were employed in the sole-leather department of individual establishments, in many cases but a fraction of that number are now employed. These employees were not only lost entirely to the industry, but reduced the number in a class that received above the average wages.

Statistics relating to the cost of materials used and the value of the products make it evident, notwithstanding the increased use of machinery and improvement in methods, that it is costing more to manufacture shoes now than it did ten years ago. There was an increase of 42.8 per cent in the cost of materials during the decade, while the value of the finished product shows an increase of but 18.3 per cent.

Table 2 shows the capital invested in machinery, tools, and implements, the total value of products, the value of machinery, tools, and implements required for a product of $100, by states, 1890 and 1900, with the per cent of increase for the decade.

Since the invention of the rolling machine—the first practical mechanical substitute for hand labor—there has been constant progress in the perfection of shoe machinery. The shoe factory of to-day provides a perfect system of continuous manufacture, involving, in some instances, more than 100 operations. The continued improvement of the various machines, together with the keen competition in the business, has made necessary the adoption, as soon as perfected, of the latest devices. This will be seen in the increase for 1900, over the previous census year, in the value of machinery, tools, and implements required for a product valued at $100, as shown in Table 2. The total increase for this item is $3,083,941, or 22.2 per cent for the industry. In 1900 the average amount invested in machinery, tools, and implements for a product valued at $100 was $6.50, compared with $6.29 in 1890, an increase of 3.3 per cent. This item varies greatly in the several states, being reported as high as $18.57 in California, and as low as $2.57 in Rhode Island. Massachusetts shows the largest investment in machinery, $5,750,238. The increase was but $94,200, or 1.7 per cent, while the amount invested in machinery required for a product valued at $100 shows an increase of 1 per cent. The largest percentage increase in machinery during the decade is credited to Georgia. The amount of money involved, though but $23,400, indicates an increase of more than 500 per cent over 1890. The average amount of investment in machinery for a $100 product in Georgia was $6.76, or within 35 cents of the average for the United States. Indiana also shows a large increase in machinery, the percentage being 307.5. The other states having more than doubled the value of their machinery are Vermont, showing an increase of 156.9 per cent; Minnesota, 143.5 per cent; Missouri, 108.4 per cent; and Ohio, 113.9 per cent.

While the manufacture of boots and shoes in other sections of the United States has made marked progress, New England still maintains the lead in the industry, the output for that section in 1900 representing 59.5 per cent of the total for the United States. The output of the factories of Massachusetts for 1900 was $117,115,243, or 44.9 per cent of the total for the entire country, compared with 52.7 per cent in 1890, a decrease of 7.8 per cent, although showing a small increase over the value of the products of the state for the decade.

TABLE 2.—CAPITAL INVESTED IN MACHINERY, TOOLS, AND IMPLEMENTS, VALUE OF PRODUCTS, AND AVERAGE AMOUNT OF INVESTMENT REQUIRED FOR A PRODUCT VALUED AT $100: BY STATES, 1890 AND 1900, WITH PER CENT OF INCREASE.

STATES.	Year.	Machinery, tools, and implements.	Value of products.	Average amount of investment in machinery, tools, and implements required for a product valued at $100.	PER CENT OF INCREASE.		
					Machinery, tools, and implements.	Value of products.	Average amount of investment in machinery, tools, and implements required for a product valued at $100.
United States	1900	$16,957,305	$261,028,580	$6.50	22.2	18.3	3.3
	1890	13,873,364	220,649,358	6.29			
California	1900	343,633	1,850,511	18.57	6.0	[1]45.5	94.5
	1890	324,252	3,395,043	9.55			
Connecticut	1900	117,172	1,517,364	7.72	[1]21.4	[1]1.2	[1]20.4
	1890	148,981	1,535,125	9.70			
Georgia	1900	23,400	346,259	6.76	500.0	1,767.4	[1]67.9
	1890	3,900	18,542	21.03			
Illinois	1900	931,083	11,434,842	8.14	46.4	30.6	12.1
	1890	635,816	8,756,824	7.26			
Indiana	1900	97,157	864,090	11.24	307.5	380.2	[1]15.2
	1890	23,845	179,936	13.25			
Iowa	1900	86,471	786,141	11.00	21.8	36.9	[1]11.0
	1890	71,000	574,378	12.36			
Kentucky	1900	44,456	630,358	7.05	[1]36.5	19.8	[1]47.0
	1890	70,000	526,387	13.30			
Louisiana	1900	72,933	660,987	11.03	19.3	[1]31.7	74.8
	1890	61,125	968,017	6.31			
Maine	1900	663,326	12,295,847	5.39	12.2	19.0	[1]5.8
	1890	591,304	10,335,342	5.72			
Maryland	1900	167,326	1,129,153	14.82	[1]6.2	[1]26.4	27.4
	1890	178,433	1,533,761	11.63			
Massachusetts	1900	5,750,238	117,115,243	4.91	1.7	0.6	1.9
	1890	5,656,038	116,387,900	4.86			
Michigan	1900	150,800	1,915,179	7.87	2.6	[1]7.3	10.5
	1890	146,997	2,065,531	7.12			
Minnesota	1900	337,236	3,615,801	9.33	143.5	77.9	37.0
	1890	138,512	2,032,814	6.81			
Missouri	1900	804,568	11,253,202	7.15	108.4	132.5	[1]10.3
	1890	385,982	4,841,004	7.97			
Nebraska	1900	8,700	73,210	11.88	.....	.....	.....
	[2]1890	.....	.....	.....			
New Hampshire	1900	1,063,569	23,405,558	4.54	58.1	95.3	[1]19.1
	1890	672,537	11,986,003	5.61			
New Jersey	1900	736,375	6,978,043	10.55	38.2	[1]3.8	43.7
	1890	532,757	7,255,409	7.34			
New York	1900	2,362,396	25,585,631	9.23	16.6	8.1	7.7
	1890	2,026,690	23,661,204	8.57			
North Carolina	1900	7,450	73,493	10.14	[1]35.2	[1]52.9	37.4
	1890	11,500	155,900	7.38			
Ohio	1900	1,180,322	17,920,854	6.59	113.9	111.1	1.4
	1890	551,756	8,489,728	6.50			
Pennsylvania	1900	1,309,513	13,235,933	9.89	15.9	27.8	[1]9.3
	1890	1,129,464	10,354,850	10.91			
Rhode Island	1900	6,200	241,278	2.57	[1]7.5	51.9	[1]39.1
	1890	6,700	158,800	4.22			
Utah	1900	21,743	225,986	9.62	.....	.....	.....
	[2]1890	.....	.....	.....			
Vermont	1900	77,596	792,707	9.79	156.9	49.7	71.5
	1890	30,209	529,486	5.71			
Virginia	1900	47,034	1,452,480	3.24	[1]40.6	13.6	[1]47.7
	1890	79,238	1,279,069	6.19			
Washington	1900	14,715	166,423	8.84	.....	.....	.....
	[2]1890	.....	.....	.....			
Wisconsin	1900	462,255	4,791,684	9.65	48.6	61.2	[1]7.8
	1890	311,059	2,972,233	10.47			
All other states[4]	1900	69,638	670,323	10.39	34.3	22.7	9.4
	1890	85,269	656,072	13.00			

[1] Decrease.
[2] Included in "all other states."
[3] No establishments reported.
[4] Includes establishments distributed as follows: 1900—Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2. 1890—Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas, 3; Utah, 2; Washington, 1.

Table 3 shows the relative rank of the various states as regards capital, number of wage-earners, total wages, and value of products at the censuses of 1880, 1890, and 1900.

TABLE 3.—RANK BY CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, TOTAL WAGES, AND VALUE OF PRODUCTS, BY STATES ARRANGED GEOGRAPHICALLY: 1880, 1890, AND 1900.

STATES.	Year.	CAPITAL.		WAGE-EARNERS.				PRODUCTS.	
		Rank.	Amount.	Average number.		Total wages.		Rank.	Value.
				Rank.	Number.	Rank.	Amount.		
United States	1900	.....	$101,795,233	.....	142,922	.....	$59,175,883	.....	$261,028,580
	1890	.....	95,282,311	.....	133,690	.....	60,667,145	.....	220,645,958
	1880	.....	42,994,028	.....	111,152	.....	43,001,438	.....	166,050,354
New England states	1900	.....	52,174,549	.....	78,167	.....	35,810,981	.....	155,867,997
	1890	.....	54,389,199	.....	82,901	.....	39,140,122	.....	140,932,656
	1880	.....	24,882,383	.....	71,517	.....	28,574,114	.....	111,864,440
Maine	1900	7	5,148,278	6	6,432	7	2,664,672	6	12,295,847
	1890	4	4,804,946	5	6,382	5	2,868,500	5	10,335,342
	1880	6	1,369,000	5	3,919	5	1,335,168	5	5,823,541
New Hampshire	1900	8	3,123,481	4	12,007	8	4,971,954	8	23,405,558
	1890	5	3,956,774	3	7,912	3	3,337,167	8	11,986,003
	1880	5	1,696,200	4	4,434	4	1,792,832	4	7,230,804
Vermont	1900	19	478,184	20	355	20	128,771	18	792,707
	1890	18	348,827	20	227	20	94,766	19	529,486
	1880	18	88,000	23	101	20	41,950	19	198,200
Massachusetts	1900	1	37,577,630	1	58,645	1	27,745,820	1	117,115,243
	1890	1	44,567,702	1	67,374	1	32,379,899	1	116,387,900
	1880	1	21,098,133	1	61,651	1	24,875,106	1	95,900,510
Rhode Island	1900	25	57,358	27	9	27	1,888	23	241,278
	1890	28	27,850	24	11	24	4,084	22	158,800
	[1]1880	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut	1900	14	789,618	16	719	14	297,826	14	1,517,364
	1890	15	683,100	15	995	15	455,706	14	1,535,125
	1880	11	631,000	11	1,412	11	529,058	11	2,211,885
Middle states	1900	.....	22,496,588	.....	30,257	.....	11,262,119	.....	46,928,760
	1890	.....	21,020,753	.....	29,321	.....	12,390,279	.....	42,805,224
	1880	.....	11,410,222	.....	26,378	.....	9,596,980	.....	35,471,510
New York	1900	2	11,983,239	2	15,796	2	6,138,653	2	25,585,631
	1890	2	11,950,891	2	15,361	2	6,629,641	2	23,661,204
	1880	2	6,227,537	2	13,414	2	4,902,132	2	18,979,259
New Jersey	1900	9	3,153,255	9	4,421	9	1,723,159	9	6,978,043
	1890	9	2,811,098	7	5,162	7	2,206,652	8	7,255,409
	1880	9	964,245	6	3,318	6	1,278,269	6	4,689,286
Pennsylvania	1900	5	6,860,480	5	9,144	5	3,111,113	5	13,235,933
	1890	3	5,394,799	4	7,616	4	3,094,582	4	10,354,850
	1880	3	3,627,840	3	7,845	3	2,820,976	3	9,590,002
Maryland	1900	18	499,609	15	896	15	289,194	16	1,129,158
	1890	14	863,965	13	1,182	14	459,404	15	1,533,761
	1880	12	590,600	10	1,796	10	595,608	10	2,212,958
Southern states	1900	.....	1,313,293	.....	2,047	.....	482,049	.....	3,163,577
	1890	.....	1,209,532	.....	1,451	.....	587,433	.....	2,947,916
	1880	.....	356,700	.....	980	.....	288,886	.....	1,163,493
Virginia	1900	15	641,166	12	1,153	16	206,119	15	1,452,480
	1890	16	501,661	19	252	17	115,414	16	1,279,069
	1880	20	60,800	18	221	22	30,381	21	187,520
North Carolina	1900	27	37,700	26	40	26	14,107	26	73,498
	1890	21	118,000	22	95	22	26,720	23	156,900
	1880	23	34,000	22	108	23	23,900	23	107,600
Georgia	1900	23	90,700	21	250	21	66,000	22	346,259
	1890	24	16,461	23	22	23	4,104	25	18,542
	1880	22	41,800	25	88	25	11,445	24	89,725
Kentucky	1900	21	254,382	22	207	23	50,819	21	630,358
	1890	20	280,166	17	296	18	112,295	20	526,387
	1880	17	197,100	15	472	16	159,587	16	578,732
Tennessee	[2]1900	.....	.....	.....	.....	.....	.....	.....	.....
	[2]1890	.....	.....	.....	.....	.....	.....	.....	.....
	1880	26	6,000	26	26	26	9,905	26	35,826
Louisiana	1900	20	289,845	19	397	19	145,004	20	660,987
	1890	19	293,244	16	786	16	328,900	17	968,017
	1880	24	17,000	21	115	19	58,618	22	164,090

[1] No establishments reported.

[2] Included in "all other states."

TABLE 3.—RANK BY CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, TOTAL WAGES, AND VALUE OF PRODUCTS, BY STATES ARRANGED GEOGRAPHICALLY: 1880, 1890, AND 1900—Continued.

STATES.	Year.	CAPITAL.		WAGE-EARNERS.				PRODUCTS.	
				Average number.		Total wages.			
		Rank.	Amount.	Rank.	Number.	Rank.	Amount.	Rank.	Value.
Central states	1900	.....	$23,980,711	.....	31,011	.....	$11,006,763	.....	$52,581,793
	1890	.....	16,592,691	.....	17,860	.....	7,281,803	.....	29,912,448
	1880	.....	5,169,040	.....	9,388	.....	3,366,085	.....	13,966,600
Ohio	1900	4	7,549,142	3	12,718	4	3,989,744	4	17,920,854
	1890	8	3,176,318	6	5,743	6	2,303,393	7	8,489,728
	1880	7	1,154,200	7	3,204	7	1,089,116	7	4,167,476
Michigan	1900	13	1,135,961	13	1,117	13	386,074	12	1,915,179
	1890	13	972,584	12	1,309	13	495,202	12	2,065,581
	1880	15	343,500	14	783	14	340,172	14	1,216,255
Indiana	1900	16	542,224	17	610	18	151,455	17	864,090
	1890	22	93,065	21	173	21	57,079	21	179,936
	1880	16	226,500	17	341	17	111,465	17	476,845
Illinois	1900	6	5,351,482	8	5,553	6	2,694,959	7	11,484,842
	1890	6	3,781,476	8	3,992	8	1,896,998	6	8,756,824
	1880	4	1,729,200	9	2,060	9	755,769	9	3,183,026
Wisconsin	1900	10	2,473,626	10	2,507	10	821,403	10	4,791,684
	1890	10	2,621,606	11	2,036	11	774,163	11	2,972,233
	1880	13	548,800	13	1,177	13	381,732	13	1,736,778
Minnesota	1900	11	2,237,540	11	2,025	11	719,231	11	3,615,801
	1890	11	1,794,711	14	1,099	12	524,978	13	2,032,814
	1880	14	463,000	16	402	15	207,218	15	980,192
Iowa	1900	17	506,757	18	566	17	191,783	19	786,141
	1890	17	435,066	18	292	19	110,100	18	574,378
	1880	19	61,040	20	139	21	32,950	18	248,040
Missouri	1900	8	4,183,979	7	5,915	8	2,052,114	8	11,253,202
	1890	7	3,712,915	9	2,716	9	1,119,390	9	4,841,004
	1880	10	642,800	12	1,282	12	447,663	12	1,982,998
Western states	1900	.....	167,767	.....	195	.....	69,860	.....	299,196
	[1]1890	.....	.....	.....	.....	.....	.....	.....	.....
	1880	.....	76,050	.....	253	.....	69,020	.....	245,483
Nebraska	1900	26	43,500	25	55	25	17,302	27	73,210
	[1]1890	.....	.....	.....	.....	.....	.....	.....	.....
	[2]1880	.....	.....	.....	.....	.....	.....	.....	.....
Utah	1900	22	124,267	23	140	22	52,558	24	225,986
	[1]1890	.....	.....	.....	.....	.....	.....	.....	.....
	1880	21	60,050	19	186	18	55,220	20	189,669
Kansas	[1]1900	.....	.....	.....	.....	.....	.....	.....	.....
	[1]1890	.....	.....	.....	.....	.....	.....	.....	.....
	1880	25	16,000	24	67	24	13,800	25	55,814
Pacific states	1900	.....	1,328,317	.....	1,069	.....	488,388	.....	2,016,934
	1890	.....	1,740,175	.....	2,280	.....	1,109,419	.....	3,895,043
	1880	.....	1,001,183	.....	2,499	.....	1,064,988	.....	3,649,551
Washington	1900	24	71,071	24	75	24	31,461	25	166,423
	[1]1890	.....	.....	.....	.....	.....	.....	.....	.....
	[2]1880	.....	.....	.....	.....	.....	.....	.....	.....
California	1900	12	1,257,746	14	994	12	456,927	13	1,850,511
	1890	12	1,740,175	10	2,280	10	1,109,419	10	3,895,043
	1880	8	1,001,183	8	2,499	8	1,064,988	8	3,649,551
All other states[3]	1900	.....	333,513	.....	176	.....	55,773	.....	670,323
	1890	.....	329,961	.....	377	.....	158,589	.....	656,072
	1880	.....	98,500	.....	142	.....	41,405	.....	219,277

[1] Included in "all other states."
[2] No establishments reported.
[3] Includes establishments distributed as follows: 1900—Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2. 1890—Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas, 3; Utah, 2; Washington, 1. 1880—Colorado, 1; Idaho, 1; Mississippi, 2; Oregon, 1; West Virginia, 1.

Although the total capital for the United States shows an increase of $6,512,922, there was a decrease shown in reports from 7 states, ranging from $6,990,072 in Massachusetts to $3,899 in Louisiana. Maryland shows a decline in capital of $364,536; Wisconsin, $147,980; California, $482,429; Kentucky, $25,784; and North Carolina, $80,300. Louisiana, Maryland, and North Carolina show a decrease in value of products from 1890 to 1900. There was also a decrease in the average number of wage-earners in these states, except Wisconsin, although the returns for the United States, as a whole, show an increase of 9,232. On the other hand, each of the states showing a falling off in capital, and decrease in the number of wage-earners, except

California, reports an increase in the value of products, amounting, in the case of Wisconsin, to $1,819,451, or 61.2 per cent of the total of $2,972,233 in 1890. Of the geographic divisions, New England, in 1900, employed by far the largest capital, $52,174,549, or $1,276,932 in excess of one-half of the total for the industry in the United States. The average number of wage-earners, men, women, and children, in New England shoe factories was 78,167, or 54.7 per cent of the total, while the value of products for that section was $155,367,997, or 59.5 per cent of the total for the United States.

Of the New England states, in 1900, Maine occupied the position, as regards capital, that was held by Missouri in 1890, that of seventh in rank; though in the matter of product, Maine was sixth in 1900, and Missouri was eighth. Maine shows a gain in capital of $343,332, or 7.1 per cent, and an increase in product of $1,960,505, or 19 per cent. Compared with 1880, the gain in capital was 276.1 per cent, and in product 111.1 per cent. From 1890 to 1900, New Hampshire's gain in capital was $4,166,707, or 105.3 per cent, and in product, $11,419,555, or 95.3 per cent. For the same decade, Connecticut reports an increase in capital of 15.6 per cent, but shows a slight falling off in product, amounting to 1.2 per cent. Vermont and Rhode Island both show gains in capital and product, the latter aggregating $345,699 for the two states. Massachusetts shows a decrease in capital of $6,990,072, or 15.7 per cent, while the value of the product increased $727,343. From 1880 to 1900 the increase was $21,214,733.

Massachusetts, while first in rank in every item relating to shoe manufacture, shows a loss in the number of wage-earners of 8,729, or 13.0 per cent, in a total of 58,645 for 1900. The wages show nearly the same decrease, or 14.3 per cent, indicating a slight falling off in this item.

New Hampshire, which ranks second in New England as regards capital, wages, and products, ranks fourth in the United States in the number of wage-earners. This state shows an output valued at $23,405,558, with 12,007 wage-earners, who received $4,971,954. In 1890 it required 7,912 workers to produce $11,986,003, while $7,230,804 was produced by 4,434 wage-earners in 1880, the state then ranking fourth in all items except that of capital.

In 1900, Ohio in the matter of capital occupied fourth place, which was held by Maine in 1890, and by Illinois in 1880, and had 12,718 wage-earners, who earned $3,989,744; the products were valued at $17,920,854.

Illinois shows a gain in capital, in the number of wage-earners, wages paid, and the value of products. In capital the state stands sixth, as it also does in the total wages paid; but it ranks eighth in the number of wage-earners, and seventh in the value of products. The gain by this state since the census of 1880 represents $3,622,282 in capital, 3,493 in the number of wage-earners, and $8,251,816 in value of products.

Compared with the capital invested each wage-earner in the United States represented $712 in 1900, being about the same as in 1890. The largest amount of capital per wage-earner, $1,265, is reported from California. Of the other states having $1,000,000 capital and upward, Illinois has $964 invested for each wage-earner; Maine, $800; Massachusetts, $641; Michigan, $1,017; Minnesota, $1,105; New Hampshire, $677; New Jersey, $713; New York, $759; Pennsylvania, $750; Ohio, $594, and Wisconsin, $987. The increase in the average number of wage-earners from 1880 to 1890 was 20.3 per cent, and but 6.9 per cent during the decade from 1890 to 1900.

The Middle states, comprising New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia, employed capital amounting to $22,496,583, or 22.1 per cent of the total. The average number of wage-earners represents 21.2 per cent of the whole, while the product aggregates $46,928,760, or 18 per cent of the total. Of these states, Pennsylvania made the largest gain in capital over 1890, $1,465,681 in a total of $6,860,480, or 27.2 per cent. From 1890 to 1900 the average number of wage-earners in Pennsylvania increased from 7,616 to 9,144, while the value of the products increased from $10,354,850 to $13,235,933, a gain of $2,881,083, or 27.8 per cent.

New York still ranks second in the amount of capital, average number of wage-earners, and value of products. From 1890 to 1900 the gain in capital was but $32,348 in a total of $11,983,239, while the output increased from $23,661,204 to $25,585,631.

New Jersey, though reporting an increase of $342,157 in capital, shows a falling off both in the average number of wage-earners and the value of products, the decrease for the latter item being $277,366.

With the exception of Virginia and Georgia, every Southern state engaged in the shoe-manufacturing industry shows a decline in the amount of capital, aggregating, for the entire section, $109,983, or 22.9 per cent.

In 1900 North Carolina had a capital of $37,700, or $80,300 less than at the census of 1890.

In 1900 Kentucky had a capital of $254,382, against $280,166 in 1890; while Louisiana has $289,345, compared with $293,244. This decrease, however, does not indicate in every case a falling off in the product. For instance, Kentucky, while showing a decline in capital of $25,784, had an increased output of $103,971 in a total of $630,358. Louisiana, on the other hand, with a capital only $3,899 less than in 1890, shows a decrease of $307,030 in the value of its products.

The increase in the product from 1890 to 1900 was 18.3 per cent, or about three times the percentage of increase in the number of wage-earners. This is accounted for by the greater efficiency of machinery and the perfection of the factory system, which allows the largest output at the minimum expenditure of labor. The manufacture of boots and shoes, particularly in the

Eastern states, is to-day carried on under as favorable conditions, as regards the economical use of labor, modern machinery, and general factory appliances, as any other line of manufacture. This accounts for the low average cost of factory-made boots and shoes, as shown by Table 10.

The Eastern states are producing more per wage-earner than is the case where shoe manufacture is a newer industry. For instance, in Massachusetts the average product per wage-earner was $1,997.02, while in Michigan it was $1,714.57. In Maine the average was $1,911.67; in Missouri, $1,902.49; and in Ohio, $1,409.09.

It will be seen by the foregoing that while New England is still far in the lead in the production of boots and shoes, employing more than half the total capital and manufacturing considerably more than half of the entire shoe output, the Western states have made large gains during the last decade, though not so large as was generally expected. For, marked as the gain in the West has been, amounting to more than 75 per cent, it is but little more than half the total increase for the United States.

That Massachusetts has not made a larger gain is compensated for in the increase in New Hampshire and Maine, both in the same section; the increase in the first-named state alone being equal to the entire production of either Illinois or Missouri.

The advance made by Ohio is notable, as in passing from the seventh rank to that of fourth, the state takes a position in advance of Pennsylvania, Maine, and Illinois.

Michigan, though losing 7.3 per cent, holds its relative position.

Table 4 shows for 1900 the quantity and cost of each kind of leather used in the manufacture of footwear during the census year; the cost of findings, linings, trimmings, and other sundries; the amounts paid for fuel, power, heat, mill supplies, and all other materials; and the kinds, quantity, and value of the products.

TABLE 4.—MATERIALS AND PRODUCTS: CLASSIFIED BY NUMBER OF ESTABLISHMENTS, 1900.

	Number of establishments.	Unit of measure.	Quantity.	Cost of materials used.
Materials: Total				$169,604,054
Sole leather	946	Pounds	178,504,837	39,192,300
Split leather	273	Pounds	15,817,460	3,109,729
Calf and kip skins	420	Pounds	10,569,581	7,069,408
Grain and other side leather	587	Square feet	131,542,365	15,950,818
Goatskins	1,019	Square feet	233,050,841	35,398,638
All other upper material	881	Square feet	98,866,823	15,578,659
Sheep and leather linings and trimmings.	1,322			7,429,156
Cut soles, taps, heels, etc., purchased.	986			17,248,898
Findings, purchased	1,553			12,902,750
Fuel, rent of power and heat, mill supplies, freight, and all other materials.				15,723,698

TABLE 4.—MATERIALS AND PRODUCTS: CLASSIFIED BY NUMBER OF ESTABLISHMENTS, 1900—Continued.

	Number of establishments.	Unit of measure.	Quantity.	Value of products.
Products: Total			219,235,419	$261,028,580
Men's boots and shoes	561	Pairs	68,042,839	108,705,938
Boys' and youths' boots and shoes.	389	Pairs	21,080,479	20,799,297
Women's boots and shoes	589	Pairs	65,372,653	82,504,303
Misses' and children's boots and shoes.	552	Pairs	42,043,202	30,319,611
Men's and boys' and youths' slippers.	136	Pairs	4,456,965	2,812,213
Women's, misses' and children's slippers.	279	Pairs	12,655,876	10,146,393
All other kinds	127	Pairs	5,583,405	2,491,511
All other products	161			2,175,738
Amount received for custom or contract work.	148			1,073,576

Table 4 shows that sole leather was the largest item of materials used, 178,504,837 pounds, costing $39,192,300, being required for the total products of 219,235,419 pairs of boots and shoes. Goatskins constituted the largest portion of upper leather, the quantity reported being 233,050,841 square feet, costing $35,398,638—almost equal to the total cost of all other upper leathers. Split leather was used to the amount of 15,817,460 pounds, costing $3,109,729; while there were 10,569,581 pounds of calf and kip skins, costing $7,069,408, and 131,542,365 pounds of grain and other side leather, costing $15,950,818. All other upper material amounted to $15,578,659. Sheep and leather linings and trimmings cost $7,429,156, while cut soles, taps, heels, etc., were purchased, costing $17,248,898. Findings, fuel, power and heat, mill supplies, freight, and all other materials, amounting to $28,626,448, brought the total cost of materials up to $169,604,054. Men's boots and shoes led in the quantity and value of the products, the returns for the census year showing an output of 68,042,839 pairs, valued at $108,705,938. Women's boots and shoes followed with 65,372,653 pairs, valued at $82,504,303, while 42,043,202 pairs of misses' and children's shoes were made, valued at $30,319,611. The average cost of each pair of footwear was $1.19, and, after deducting the 3,016,720 pairs exported, permits a per capita consumption in the United States of 2.8 pairs.

Table 5 shows cities and towns having products valued at $1,000,000 in 1900, ranked by value of products, 1890 and 1900.

TABLE 5.—CITIES AND TOWNS HAVING PRODUCTS OF OVER $1,000,000 IN 1900, RANKED BY VALUE OF PRODUCTS: 1890 AND 1900.

CITIES.	1900		1890	
	Rank.	Value of product.	Rank.	Value of product.
Brockton, Mass	1	$19,844,397	2	$16,171,624
Lynn, Mass	2	16,830,733	1	20,190,695
Haverhill, Mass	3	15,231,440	3	16,137,352
Cincinnati, Ohio	4	8,788,424	7	6,024,454
St. Louis, Mo	5	8,286,156	9	4,250,960
Rochester, N. Y	6	6,933,111	6	6,489,382
Philadelphia, Pa	7	5,931,045	5	6,851,334

TABLE 5.—CITIES AND TOWNS HAVING PRODUCTS OF OVER $1,000,000 IN 1900, RANKED BY VALUE OF PRODUCTS: 1890 AND 1900—Continued.

CITIES.	1900		1890	
	Rank.	Value of product.	Rank.	Value of product.
Brooklyn, N. Y	8	$5,733,432	12	$2,489,885
Chicago, Ill	9	5,723,126	4	7,257,034
Auburn, Me	10	4,176,826	.....	(1)
Manchester, N. H	11	4,052,204	23	39,024
Boston, Mass	12	3,882,655	17	1,508,697
Marlboro, Mass	13	3,852,931	.....	(1)
Whitman, Mass	14	3,609,009	.....	(1)
Columbus, Ohio	15	3,505,126	20	359,000
Nashua, N. H	16	3,433,597	.....	(1)
New York, N. Y	17	3,391,063	8	5,306,411
Portsmouth, Ohio	18	3,043,916	.....	(1)
Salem, Mass	19	2,974,631	18	1,178,724
North Adams, Mass	20	2,881,474	.....	(1)
North Brookfield, Mass	21	2,798,711	.....	(1)
Newburyport, Mass	22	2,714,693	.....	(1)
Beverly, Mass	23	2,627,587	.....	(1)
Newark, N. J	24	2,580,048	13	2,266,789
Hudson, Mass	25	2,317,636	.....	(1)
Jefferson City, Mo	26	2,236,278	.....	(1)
Weymouth, Mass	27	2,235,253	.....	(1)
Natick, Mass	28	2,228,791	.....	(1)
Milwaukee, Wis	29	2,195,928	14	1,617,534
Abington, Mass	30	2,170,880	.....	(1)
Rochester, N. H	31	2,143,883	.....	(1)
Spencer, Mass	32	2,000,205	.....	(1)
Stoneham, Mass	33	1,946,783	.....	(1)
St. Paul, Minn	34	1,645,999	22	133,375
San Francisco, Cal	35	1,618,514	10	3,315,043
Worcester, Mass	36	1,610,605	11	2,928,545
Rockland, Mass	37	1,604,000	.....	(1)
Derry, N. H	38	1,580,000	.....	(1)
Portsmouth, N. H	39	1,509,050	.....	(1)
Exeter, N. H	40	1,503,650	.....	(1)
Milford, Mass	41	1,472,671	.....	(1)
Bridgewater, Mass	42	1,230,589	.....	(1)
Richmond, Va	43	1,224,689	19	1,071,680
Somersworth, N. H	44	1,215,426	.....	(1)
Detroit, Mich	45	1,212,742	15	1,611,700
Randolph, Mass	46	1,190,949	.....	(1)
Burlington, N. J	47	1,180,649	.....	(1)
Webster, Mass	48	1,162,939	.....	(1)
Claremont, N. H	49	1,126,234	.....	(1)
Dover, N. H	50	1,113,266	.....	(1)
Middleboro, Mass	51	1,066,568	.....	(1)
Baltimore, Md	52	1,065,507	16	1,519,261
Minneapolis, Minn	53	1,008,007	21	211,684
New Bedford, Mass	54	1,006,881	.....	(1)

[1] Not reported.

Until well along in the present century little attempt was made to establish the boot and shoe industry outside eastern Massachusetts. However, it was not to be expected that the other enterprising sections of the United States would always remain content to depend entirely on New England for so important an article of merchandise as shoes. In New York city and other cities of New York state, especially Rochester, the industry has attained large proportions and has reached a high state of perfection. In Newark, N. J., where the business was early established, are made many of the finest shoes for men; and in Philadelphia the shoe industry has become very prominent among the manufactures for which that city is celebrated. In Cincinnati and St. Louis shoes are produced in great quantities and of an excellent style and finish. Chicago has taken up the industry with an energy that has already placed her in a prominent position, and she has several factories which equal those of older shoe-manufacturing centers.

In fact, all through the West, including the Pacific coast, there are scores of thoroughly equipped and financially successful shoe factories. It will be noticed that some cities, well up in the scale in 1900, were not reported in 1890, thus precluding any comparison of them during the decade. It must not be inferred, however, that no shoes were manufactured in those places in 1890. At the Eleventh Census only 165 principal cities were reported by specified industries. Several cities and towns named in the table produced boots and shoes in considerable quantities in 1890, but, as their manufacturing statistics were not shown separately, no figures are available for purposes of comparison. They appear in Table 5 as not reporting for 1890, but are ranked according to the output for 1900.

Lynn, Mass., which has been foremost as a shoe center for one hundred and seventy-five years, changes places in the census of 1900 with Brockton, Mass., as the largest producer of boots and shoes, the latter city having an output of $19,844,397. This is $346,298 less than Lynn is reported to have produced in 1890, but $3,013,664 more than was turned out in 1900. Haverhill, Mass., which ranks third in 1900, held the same position in 1890, though her output shows a decrease of $905,912. The decrease in the output of Lynn and Haverhill, shown by the returns for 1900, is undoubtedly due in a measure to the fact that the business for the census year was below normal, and the decrease in the value of products of Lynn is still further explained by the fact that just previous to the present census year one of the largest shoe manufacturing establishments in the city removed its entire business to Boston.

In 1900 Cincinnati, Ohio, takes fourth place, which was occupied at the Eleventh Census by Chicago, the latter city having dropped 5 numbers in the meantime.

Philadelphia's standing changed from fifth to seventh place and had a reduced output.

Remarkable gains are shown by several cities, one of the most notable being Manchester, N. H. In 1890 this city ranked twenty-third, with an output of $39,024; in 1900 it ranked eleventh, the production having increased to $4,052,204.

St. Louis, Mo., has nearly doubled the value of its product, which, in 1900, amounted to $8,286,156, compared with $4,250,960 in 1890. Boston made $3,882,655 worth of boots and shoes in 1900, compared with $1,508,697 in 1890.

Auburn, Me., not reported among the 165 principal cities ten years ago, ranks tenth, with an output of $4,176,826 in 1900.

Marlboro, Mass., showing a product of $3,852,931 with the rank of 13 would, under normal local conditions, be entitled to a much higher place, but unfortunately labor difficulties during a portion of the Census year are said to have reduced the output of the factories located there nearly one-half.

Columbus, Ohio, which stood twentieth at the Eleventh Census, with an output valued at $359,000, in 1900 is fifteenth in rank, with products valued at $3,505,126.

New York city shows a falling off of $1,915,348, during the decade, its rank having been reduced from eighth to seventeenth.

Chicago shows a decrease of $1,533,908 in the value of products for 1900, and drops from fourth to ninth place. The total in 1890 was $7,257,034.

St. Paul, Minn., while ranking thirty-fourth instead of twenty-second as in 1890, shows an increase of $1,512,624 in value of its output, and Minneapolis, Minn., increased from $211,684 in 1890 to $1,008,007 in 1900, although changing its rank from twenty-first to fifty-third.

Worcester, Mass., which stood eleventh in 1890, ranks as thirty-sixth, with an output of $1,610,605 in 1900, as compared with $2,923,545 at the Eleventh Census.

San Francisco, Cal., which ranked tenth in 1890, with products valued at $3,315,043, drops to thirty-fifth in 1900, and the value of its output decreased to $1,618,514.

It will be seen that 3 Massachusetts cities, Brockton, Lynn, and Haverhill, produced 27.4 per cent of the total for the 54 principal cities, while all the Massachusetts cities and towns in the list turned out 53.0 per cent of the total for cities and towns, having a product exceeding $1,000,000 each.

Table 6 shows the average number of men, women, and children employed in the industry, and the changes that have taken place in the employment of these classes in the United States as a whole, and in the several states, since the taking of the Eleventh Census.

TABLE 6.—AVERAGE NUMBER OF WAGE-EARNERS AND PROPORTION OF MEN, WOMEN, AND CHILDREN, BY STATES: 1890 AND 1900.

STATES.	Year.	AVERAGE NUMBER OF WAGE-EARNERS.				PER CENT OF TOTAL.		
		Total average number.	Men, 16 years and over.	Women, 16 years and over.	Children, under 16 years.	Men.	Women.	Children.
United States	1900	142,922	91,215	47,186	4,521	63.8	33.0	3.2
	1890	133,690	91,406	39,849	2,435	68.4	29.8	1.8
California	1900	994	720	241	33	72.4	24.3	3.3
	1890	2,280	1,843	389	48	80.8	17.1	2.1
Connecticut	1900	719	456	254	9	63.4	35.3	1.3
	1890	995	698	285	12	70.2	28.6	1.2
Georgia	1900	250	190	40	20	76.0	16.0	8.0
	1890	22	18	3	1	81.8	13.6	4.6
Illinois	1900	5,553	3,484	1,836	233	62.7	33.1	4.2
	1890	3,992	2,678	1,282	32	67.1	32.1	0.8
Indiana	1900	610	434	170	6	71.1	27.9	1.0
	1890	173	124	46	3	71.7	26.6	1.7
Iowa	1900	566	272	227	67	48.1	40.1	11.8
	1890	292	176	116	.....	60.3	39.7	.....
Kentucky	1900	207	94	69	44	45.4	33.3	21.3
	1890	296	178	108	10	60.1	36.5	3.4
Louisiana	1900	397	326	37	34	82.1	9.3	8.6
	1890	786	727	9	50	92.5	1.1	6.4
Maine	1900	6,432	4,346	2,064	22	67.6	32.1	0.3
	1890	6,382	4,047	2,301	34	63.4	36.1	0.5
Maryland	1900	896	597	285	14	66.6	31.8	1.6
	1890	1,182	792	380	10	67.0	32.2	0.8
Massachusetts	1900	58,645	39,022	18,636	987	66.5	31.8	1.7
	1890	67,374	47,817	18,577	980	71.0	27.6	1.4
Michigan	1900	1,117	691	417	9	61.9	37.3	0.8
	1890	1,309	847	454	8	64.7	34.7	0.6
Minnesota	1900	2,025	1,438	566	21	71.0	28.0	1.0
	1890	1,099	715	383	1	65.1	34.8	0.1
Missouri	1900	5,915	3,256	2,207	452	55.1	37.3	7.6
	1890	2,716	1,569	1,024	123	57.8	37.7	4.5
Nebraska	1900	55	18	37	.....	32.7	67.3	.....
	[1]1890	.....	.....	.....	.....	.....	.....	.....
New Hampshire	1900	12,007	7,755	3,866	386	64.6	32.2	3.2
	1890	7,912	5,418	2,370	124	68.5	29.9	1.6
New Jersey	1900	4,421	2,740	1,497	184	62.0	33.8	4.2
	1890	5,162	3,294	1,720	148	63.8	33.3	2.9
New York	1900	15,796	9,754	5,483	559	61.8	34.7	3.5
	1890	15,361	10,150	4,839	372	66.1	31.5	2.4
North Carolina	1900	40	40	.....	.....	100.0	.....	.....
	1890	95	79	8	8	83.2	8.4	8.4
Ohio	1900	12,718	7,289	4,781	648	57.3	37.6	5.1
	1890	5,743	3,523	2,149	71	61.4	37.4	1.2
Pennsylvania	1900	9,144	5,291	3,239	614	57.9	35.4	6.7
	1890	7,616	4,842	2,441	333	63.6	32.0	4.4
Rhode Island	1900	9	4	4	1	44.5	44.5	11.0
	1890	11	7	3	1	63.6	27.3	9.1
Utah	1900	140	98	40	2	70.0	28.6	1.4
	[1]1890	.....	.....	.....	.....	.....	.....	.....
Vermont	1900	355	199	155	1	56.0	43.7	0.3
	1890	227	141	76	10	62.1	33.5	4.4
Virginia	1900	1,153	1,021	127	5	88.6	11.0	0.4
	1890	252	168	77	7	66.7	30.5	2.8
Washington	1900	75	50	22	3	66.7	29.3	4.0
	[1]1890	.....	.....	.....	.....	.....	.....	.....
Wisconsin	1900	2,507	1,494	849	164	59.6	33.9	6.5
	1890	2,036	1,278	727	36	62.5	35.7	1.8
All other states [2]	1900	176	136	37	3	77.3	21.0	1.7
	1890	377	282	82	13	74.8	21.8	3.9

[1] Included in "all other states."
[2] Includes establishments distributed as follows: 1900—Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2. 1890—Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas 3; Utah, 2; Washington, 1.

It will be noted that there has been a marked gain in the number of women and children, and a decrease in the number and percentage of men employed. This is accounted for by the growing tendency to substitute women for men in many of the departments of shoe manufacture, and the turning over to children of the work heretofore done by women. As a consequence, the number of women and children employed furnished a larger ratio of the total than has formerly been the case. The total average number of wage-earners reported in 1900 was 142,922, and in 1890, 133,690, an increase of 9,232, or 6.9 per cent. Men of 16 years and over numbered 91,215 in 1900, against 91,406 in

1890, a decrease of 191, or two-tenths of 1 per cent. There were 47,186 women employed in 1900, and 39,849 in 1890, an increase of 7,337, or 18.4 per cent. Children under 16 years were employed to the number of 4,521 in 1900 and 2,435 in 1890, an increase of 2,086, or 85.7 per cent.

The percentage of men decreased from 68.4 per cent to 63.8 per cent, while the percentage of women increased from 29.8 per cent to 33 per cent, and that of children from 1.8 per cent to 3.2 per cent. The largest number employed at any one time, as shown in Table 10, printed elsewhere in this report, was 169,912, and the smallest number was 116,436. February and March show the greatest activity in shoe manufacture, the total number employed in the first month being 148,015, and in the latter 149,728, or 5,093 more in February and 6,806 more in March than the average for the year.

The only state employing men exclusively was North Carolina; while another Southern state, Kentucky, reports the smallest proportion of men, 45.4 per cent. Massachusetts shoe factories, which employ 58,645 workers, have 66.5 per cent men, 31.8 per cent women, and 1.7 per cent children. New York, which follows Massachusetts, employs 15,796 wage-earners—61.8 per cent men, 34.7 per cent women, and 3.5 per cent children.

Practically all the shoe manufacturing in Rhode Island during the census year was done by contract, and the number of wage-earners engaged in such work does not appear in the table, the average number employed, outside of those persons performing contract work, being 9—4 men, 4 women, and 1 child.

Vermont has the largest proportion of women employed, 43.7 per cent, but has the smallest percentage of child labor, 0.3 per cent. This is an increase since 1890 of 10.2 per cent for women, and a decrease of 4.1 per cent for children.

New Hampshire, with 12,007 wage-earners, has doubled the percentage of child labor and employs a smaller proportion of adults. In 1900 the percentage of men wage-earners in this state was 64.6 per cent compared with 68.5 per cent, in 1890; of women 32.2 per cent, against 29.9 per cent ten years ago; and of children 3.2 per cent, compared with 1.6 per cent at the Eleventh Census.

Of the increase of 1,561 wage-earners reported for the decade in Illinois, 755, or 48.4 per cent, were women and children. This increase brings the percentage of children from 0.8 per cent in 1890 to 4.2 per cent in 1900, and increases the ratio of women 1 per cent.

Of the other Middle and Western states, Indiana reports an increase in the total number of wage-earners of 437, which, though not changing more than 1 per cent the proportion of the 3 classes employed, shows 71.1 per cent of men, 27.9 per cent of women, and 1 per cent of children. Michigan shows a decreased percentage of men and an increased percentage of women and children for the decade. In Wisconsin child labor constitutes 6.5 per cent in this industry, compared with 1.8 per cent in 1890, and 33.9 per cent was represented by women against 35.7 per cent in 1890.

CONVICT LABOR.

No account of the manufacture of boots and shoes would be complete without reference to the employment of convict labor. The business offers many advantages to the authorities of prisons who are seeking remunerative work for the men and women in their charge. The great number of operations in producing a shoe makes it possible to use all classes of convicts, from the strong to the weak; and as far back as 1850, even before machinery was introduced, it was not an uncommon thing for houses of correction and prisons to produce footwear not only for their own convicts, but to be sold in the market. After the introduction of machinery, and during the demand for cheap shoes which followed the close of the Civil War, many of the states leased the labor of their convicts to shoe manufacturers. In the year 1870 there were employed in this industry in 26 different states 6,581 convicts, while there were only 129,989 employed in the industry in the same states outside the prisons. In the fiscal year 1886 there were made by 7,609 convicts, 6,634,960 pairs of shoes, valued at $10,990,173, and it is probable that the number employed and the annual production are steadily increasing. In states where the system was believed to have a harmful influence on the wages of the workman outside the prisons, the business has been conducted on the states' account, and in some instances, at least, the result has been disastrous. Attempts have been made, in the supposed interest of labor, to forbid prison authorities to use the convicts in any industry which would compete with outside labor. At the present time, in view of the fact that the boot and shoe factories of the United States can produce in nine months all of the shoes required for consumption in twelve months, and that convicts must be worked nearly every week day of the year, their employment at shoemaking must have more or less effect on the market.[1]

[1] One Hundred Years of American Commerce, published 1895. The Boot and Shoe Trade, William B. Rice, Vol. II, pages 566 to 574.

Table 7 shows the kinds, quantity, and value of the boots and shoes manufactured in 1890 and 1900.

TABLE 7.—COMPARATIVE SUMMARY, 1890 AND 1900, KINDS, QUANTITY, AND VALUE OF PRODUCTS, WITH PER CENT OF INCREASE.

	1900	1890	Per cent of increase.
Total number of pairs	219,235,419	173,862,940	26.1
Total value of products	$261,028,580	$220,649,358	18.3
Boots and shoes for men, youths, and boys—			
Number of pairs	89,123,318	67,740,489	31.6
Value	$129,505,235	$97,496,514	32.8
Boots and shoes for women, misses, and children—			
Number of pairs	107,415,855	106,122,451	1.2
Value	$112,823,914	$115,655,533	[1] 2.4
Slippers for men, youths, and boys—			
Number of pairs	4,456,965	[2]	.....
Value	$2,812,213	[2]	.....
Slippers, oxfords, and low cuts for women, misses, and children—			
Number of pairs	12,655,876	[2]	.....
Value	$10,146,393	[2]	.....
All other kinds—			
Number of pairs	5,583,405	[2]	.....
Value	$2,491,511	[2]	.....
All other products	$3,249,314	$7,497,311	[1] 56.7

[1] Decrease. [2] Not reported separately.

The total quantity of boots and shoes manufactured in 1900 was 219,235,419 pairs, an increase over 1890 of 45,372,479 pairs, or 20.6 per cent. This is about the same as the percentage of increase in population for the United States. In 1900, 89,123,318 pairs of men's, youths', and boys' boots and shoes were manufactured, valued at $129,505,235, compared with 67,740,489 pairs, valued at $97,496,514, in 1890. Women's, misses', and children's shoes were made to the number of 107,415,855 pairs, valued at $112,823,914, in 1900, and 106,122,451 pairs, valued at $115,655,533, in 1890. Slippers, which were reported separately for the first time at the Twelfth Census, were produced for men, youths, and boys to the number of 4,456,965 pairs, valued at $2,812,213. Another new item in 1900, "slippers, oxfords, and low cuts for women, misses, and children," is represented by 12,655,876 pairs, valued at $10,146,393. In the 1890 report slippers of all kinds, oxfords, and low cuts, were classified generally under the head of "boots and shoes," and no separate report was given. This new classification accounts for the apparently small increase in the number of women's, misses', and children's shoes, and the decrease of 2.4 per cent in value during the decade. The total product for 1900 was valued at $261,028,580, compared with $220,649,358 in 1890, an increase of $40,379,222, or 18.3 per cent.

The following tabular statement shows the value of the exports of leather boots and shoes from 1870 to 1901:[1]

YEARS.	Values.	YEARS.	Values.
1901	$5,526,290	1893	$590,754
1900	4,276,656	1892	914,974
1899	2,711,385	1891	651,343
1898	1,816,588	1890	662,974
1897	1,708,224	1885	598,151
1896	1,436,686	1880	441,069
1895	1,010,228	1875	429,363
1894	777,354	1870	419,612

[1] Statistical Abstract of the United States Treasury Department.

Early manufacturers shipped goods to the West Indies, more especially to Cuba, and up to the time of the Civil War the export business was prosecuted with considerable vigor and profit. In 1810, 10 per cent of all the boots and shoes sold in Boston were for export. In the year 1865 shoes to the value of more than $2,000,000 were exported. From that time the trade fell off sharply. This may be accounted for by the great advance in 1866, when values rose at least 50 per cent. Within the last few years interest has been renewed in the export trade. Manufacturers have become convinced that there is nothing in the conditions which will prevent competition with foreign countries. The raw materials are available, and, while many hides and skins are imported, the supply of the domestic product is constantly increasing and leather manufacturers have been able to produce materials for making boots and shoes as advantageously, both in regard to quality and price, as any other country. Styles have been adapted to the wants of such countries as import their footwear. Many of the leading manufacturers are alive to the situation and are endeavoring to secure a greater share of the world's trade.

The exports, with the exception of the year 1865, appear to have been unimportant until 1895, when the first decided gain was made, the exports for that year being valued at $1,010,228. Since that date there has been a steady increase until, in 1901, these exports amounted to $5,526,290. The maximum yearly capacity of the combined factories of the United States, on a basis of three hundred working days, is slightly under 400,000,000 pairs, showing that all the factories running at full capacity would require not exceeding seven months to produce all shoes consumed in the United States, and those exported for the year ending June 30, 1900.

Table 8 shows, by states, the average amount of capital required to produce $100 worth of boots and shoes at the Tenth, Eleventh, and Twelfth censuses.

TABLE 8.—AVERAGE AMOUNT OF CAPITAL REQUIRED FOR A PRODUCT VALUED AT $100: 1880, 1890, AND 1900.

STATES.	Year.	Capital.	Value of products.	For $100 of product.
United States	1900	$101,795,233	$261,028,580	$39.00
	1890	95,282,811	220,649,358	43.18
	1880	42,994,028	166,050,354	25.89
California	1900	1,257,746	1,850,511	67.97
	1890	1,740,175	3,395,043	51.26
	1880	1,001,183	3,649,551	27.43
Connecticut	1900	789,618	1,517,364	52.04
	1890	683,100	1,535,125	44.50
	1880	631,000	2,211,385	28.53
Georgia	1900	90,700	346,259	26.19
	1890	16,461	18,542	88.79
	1880	41,800	89,725	46.59
Illinois	1900	5,351,482	11,434,842	46.80
	1890	3,781,476	8,756,824	43.18
	1880	1,729,200	3,183,026	54.33
Indiana	1900	542,224	864,090	62.75
	1890	98,065	179,936	54.50
	1880	226,500	476,845	47.50
Iowa	1900	506,757	786,141	64.46
	1890	435,066	574,378	75.75
	1880	61,040	243,040	25.11
Kansas	[1] 1900			
	[1] 1890			
	1880	16,000	55,814	28.67
Kentucky	1900	254,382	630,358	40.36
	1890	280,166	526,387	53.22
	1880	197,100	578,732	34.06
Louisiana	1900	289,345	660,987	43.77
	1890	293,244	968,017	30.29
	1880	17,000	164,090	10.36
Maine	1900	5,148,278	12,295,847	41.87
	1890	4,804,946	10,335,342	46.49
	1880	1,369,000	5,823,541	23.51
Maryland	1900	499,609	1,129,153	44.25
	1890	863,965	1,533,761	56.33
	1880	590,600	2,212,963	26.69
Massachusetts	1900	37,577,630	117,115,243	32.09
	1890	44,567,702	116,387,900	38.29
	1880	21,098,133	95,900,510	22.00
Michigan	1900	1,185,961	1,915,179	59.32
	1890	972,534	2,065,531	47.08
	1880	343,500	1,216,255	28.24
Minnesota	1900	2,237,540	3,615,801	61.88
	1890	1,794,711	2,032,814	88.20
	1880	463,000	930,192	49.77
Missouri	1900	4,183,979	11,253,202	37.18
	1890	3,712,915	4,841,004	76.70
	1880	642,800	1,982,993	32.42
Nebraska	1900	43,500	73,210	59.42
	[1] 1890			
	[2] 1880			
New Hampshire	1900	8,123,481	23,405,558	34.71
	1890	3,956,774	11,986,003	33.01
	1880	1,696,200	7,230,804	23.46
New Jersey	1900	3,153,255	6,978,043	45.19
	1890	2,811,098	7,255,409	38.74
	1880	964,245	4,689,286	20.56
New York	1900	11,983,289	25,585,681	46.84
	1890	11,950,891	23,661,204	50.51
	1880	6,227,537	18,979,259	32.81
North Carolina	1900	37,700	73,493	51.30
	1890	118,000	155,900	75.69
	1880	34,000	107,600	31.60
Ohio	1900	7,549,142	17,920,854	42.12
	1890	3,176,318	8,489,728	37.41
	1880	1,154,200	4,167,476	27.69
Pennsylvania	1900	6,860,480	13,295,933	51.88
	1890	5,394,799	10,354,850	52.10
	1880	3,627,840	9,590,002	37.83

[1] Included in "all other states."
[2] No establishments reported.

TABLE 8.—AVERAGE AMOUNT OF CAPITAL REQUIRED FOR A PRODUCT VALUED AT $100: 1880, 1890, AND 1900—Continued.

STATES.	Year.	Capital.	Value of products.	For $100 of product.
Rhode Island	1900	$57,358	$241,278	$23.77
	1890	27,850	158,800	17.54
	[1] 1880			
Tennessee	[2] 1900			
	[2] 1890			
	1880	6,000	35,826	16.75
Utah	1900	124,267	225,986	54.99
	[2] 1890			
	1880	60,050	189,669	31.66
Vermont	1900	478,184	792,707	60.32
	1890	348,827	529,486	65.88
	1880	88,000	198,200	44.40
Virginia	1900	641,166	1,452,480	44.14
	1890	501,661	1,279,069	39.22
	1880	60,800	187,520	32.42
Washington	1900	71,071	166,423	42.71
	[1] 1890			
	[2] 1880			
Wisconsin	1900	2,473,626	4,791,684	51.62
	1890	2,621,606	2,972,233	88.20
	1880	548,800	1,736,773	31.60
All other states[3]	1900	333,513	670,323	49.75
	1890	329,961	656,072	50.29
	1880	98,500	219,277	44.92

[1] No establishments reported.
[2] Included in "all other states."
[3] Includes establishments distributed as follows: 1900—Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2. 1890—Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas, 3; Utah, 2; Washington, 1. 1880—Colorado, 1; Idaho, 1; Mississippi, 2; Oregon, 1; West Virginia, 1.

Capital in 1890 and 1900 included that invested in land, buildings, and machinery, tools, and implements, together with live capital either owned or borrowed. For the United States, in 1900, the average capital was $39 for every $100 of product against $43.18 in 1890 and $25.89 in 1880. Table 8 shows that there was a wide difference in the amounts required in different sections of the country to manufacture a product valued at $100. This is explained by the varying conditions under which the business was carried on: In 1900 the two extremes appeared to be Rhode Island, requiring $23.77, and California, $67.97. California's excessive average is due to the fact that the value of the products in the state decreased from $3,395,043 in 1890 to $1,850,511 in 1900, or 45.5 per cent, while the capital decreased in a lesser ratio, from $1,740,175 to $1,257,746, or 27.7 per cent. During the same period the number of establishments declined from 56 to 30, a loss of 26, which undoubtedly accounts for a part of the loss in value of products; though in consideration of the comparatively slight reduction in the amount of capital, it would appear that the loss in establishments was of the class using small capital.

Consequently, it is evident that while the larger portion of the capital remained in the business in 1900, the product was considerably below normal, thereby adding materially to the amount of capital reported for a product of $100. Other states with a product in excess of $1,000,000, which reported more than $50 invested for

each $100 of product during the census year are as follows: Minnesota, $61.88 against $88.20 in 1890; Michigan, $59.32 against $47.08 in 1890; Connecticut, $52.04 against $44.50 in 1890; Wisconsin, $51.62 against $88.20 in 1890; and Pennsylvania, $51.83 against $52.10 in 1890. It will be noticed that the amount invested by Minnesota and Wisconsin in 1890 was precisely the same, $88.20 being the amount shown in each state; while in 1900 Wisconsin showed a reduction to $51.62 and Minnesota to $61.88. Wisconsin manufactured products valued at $4,791,684 in 1900 against $2,972,233 in 1890, with $147,980 less of capital than in 1890; while Minnesota produced $3,615,801 in 1900 compared with $2,032,814 in 1890, with an increase of $442,829 in capital.

Pennsylvania shows an increase in product over 1890 of nearly $3,000,000, with an increase of a little less than $1,500,000 in capital, showing a variation between the two censuses of only 27 cents in the amount required for a product of $100.

Michigan shows an increase of $12.24 in the capital invested for $100 of product; the capital for that state having increased $163,427, while the product was $150,352 less than in 1890.

Illinois shows an increase of $1,570,006 in capital and $2,678,018 in product; a capital of $46.80 was required for $100 of product in 1900 compared with $43.18 in 1890.

In Missouri the capital required for $100 of product diminished more than one-half during the past ten years, showing $76.70 in 1890 and $37.18 in 1900. During the decade the value of the products increased $6,412,198, while the capital increased only $471,064. This is probably due to the fact that about the year 1890 an extensive development of the industry began in that state and a large amount of capital was invested, the benefits of which were not fully realized until after the returns for the census of 1890.

The products of the state of New York show an increase of nearly $2,000,000, while the growth of capital is represented by the comparatively small sum of $32,348; thus reducing the amount required for a product of $100 from $50.51 in 1890 to $46.84 in 1900.

Maryland shows a material reduction in the amount of capital required for a product of $100 in 1900, $44.25 having been used against $56.33 in 1890.

New Jersey shows an increase of $6.45 in the average capital required, or from $38.74 in 1890 to $45.19 in 1900, with a small loss in value of products, and an actual increase in capital of $342,157.

Ohio reports an increase of $4.71 in the average capital employed, $42.12 having been required in 1900 against $37.41 in 1890. The product was more than doubled during the decade, and the total capital increased $4,372,824.

Virginia shows an increase of $4.92, or from $39.22 to $44.14, with small increases in production and capital.

With the exception of those located in Connecticut, the factories in the New England states reporting a product of more than $1,000,000, generally shows a smaller amount of capital required for a product of $100 than in states located in other sections of the United States. Maine reported $41.87 in 1900 against $46.49 in 1890; New Hampshire shows an increase of $1.70, or from $33.01 to $34.71, with an increase of more than 100 per cent in the amounts of product and capital; Massachusetts shows a decrease of $6.20 in the amount employed for a product of $100, or $32.09 in 1900 against $38.29 in 1890; the products increased $727,343 and the capital diminished $6,990,072.

The wide variation in the amount of capital employed in the different states where boot and shoe manufacturing is carried on is accounted for in various ways. That the Western, Middle, and Southern states employ a larger capital than the New England states is due in a measure to the fact that many of the manufacturers in those states dispose of a larger proportion of their products directly to the retail dealer than is the case in New England. This requires oftentimes longer credits than is required when the product is sold to the "jobber;" and, in addition to this, manufacturers selling to the retail trade are required to carry in stock a considerable quantity of manufactured goods in order to promptly supply their customers when the goods are wanted. Furthermore the manufacturers in the Western, Middle, and Southern states are farther from the source of supply and are generally obliged to buy their raw materials in larger quantities than the manufacturers located in the New England states.

Table 8 also shows that the average capital employed for a product of $100 in 1900 was $4.18 less than that employed in 1890. A comparison of figures indicates that the shoe manufacturers of the United States turned their capital 2.56 times in 1900, and 2.31 times in 1890. In almost every instance the capital employed in 1880 was very much less than in 1890 or in 1900. In 1880 manufacturers bought their materials on long credits and did not employ the vast amount of machinery which is to-day required to carry on a successful shoe-manufacturing business. The factories were run almost twelve months in the year, while the business as conducted to-day requires that most of the product should be made in a much shorter time, thus necessitating the use of larger capital. The business in 1880 was conducted on a much smaller scale, and was carried

on in comparatively inexpensive buildings, while to-day the magnitude of the business frequently requires the occupancy of immense structures of iron, brick, and stone, representing a larger amount of capital invested.

There were 2 educational, 1 eleemosynary, and 3 penal institutions returned as engaged in the manufacture of boots and shoes during the census year, using materials costing $215,110, with products valued at $269,476.

Twenty-three idle boot and shoe factories were reported in 1900. The total capital of these establishments was $413,018, divided as follows: Land, $32,560; buildings, $103,400; machinery, tools, and implements, $154,171; and cash and sundries, $122,887.

HISTORICAL AND DESCRIPTIVE.

Early History.—Few industries, in their evolution, offer a more interesting history than the manufacture of boots and shoes. Supplying, as the shoemaker does, a necessity common to all civilized people, his progress is due to the fact that the number of wearers increases each year, and the demand for his products continues in an ever-widening ratio. The history of this branch of manufacturing, as it has progressed from the shoemaker's bench, where shoes were turned out one at a time, to the modern factory with its output of thousands of pairs daily marks, as do few others, the remarkable industrial progress of the present age.

The introduction of the boot and shoe industry in America is almost coincident with the first settlement of New England, for it is a matter of history that in the year 1629 a shoemaker named Thomas Beard, with a supply of hides, arrived on board the Mayflower. This pioneer of the American boot and shoe trade was accredited to the governor of the colony, by the company in London, at a salary of £10 per annum and a grant of 50 acres of land, upon which he should settle. Seven years after the arrival of Beard, the city of Lynn saw the inception of the industry which has given it a world-wide fame, for there, in 1636, Philip Kertland, a native of Buckinghamshire, began the manufacture of shoes and fifteen years later the shoemakers of Lynn were supplying the trade of Boston. As early as 1648, we find tanning and shoemaking mentioned as an industry in the colony of Virginia, special mention being made of the fact that a planter named Matthews employed 8 shoemakers upon his own premises. Legal restraint was placed upon the business of the cordwainer in Connecticut, in 1656 and in Rhode Island in 1706, while in New York the business of tanning and shoemaking is known to have been firmly established previous to the capitulation of the province to the English, in 1664. In 1698 the industry was carried on profitably in Philadelphia, and in 1721 the colonial legislature of Pennsylvania passed an act regulating the materials and the prices of the boot and shoe industry.[1]

During the Revolution most of the shoes worn by the Continental army, as well as nearly all ready-made shoes sold throughout the colonies, were produced in Massachusetts, and we find it recorded that "for quality and service they were quite as good as those imported from England." Immediately after the Revolution, in consequence of large importations, the business languished somewhat. It soon recovered, however, and was pursued with such vigor that in 1795 there were in Lynn 200 master workmen and 600 journeymen, who produced in the aggregate 300,000 pairs of ladies' shoes. One manufacturer in seven months of the year 1795 made 20,000 pairs. In 1778 men's shoes were made in Reading, Braintree, and other towns in the Old Colony for the wholesale trade; they were sold to dealers in Boston, Philadelphia, Savannah, and Charleston, a considerable portion being exported to Cuba and other West India islands.

About the year 1795 the business was established in Milford and other Worcester county towns, where brogans were made, and sold to the planters in the Southern states for negro wear. The custom at this time was for the manufacturer to make weekly trips to Boston with his horse and wagon, taking his goods in baskets and barrels, and selling them to the wholesale trade.[2]

Early Methods.—Prior to 1815 most of the shoes were hand sewed, a few having been copper nailed; the heavier shoes were welted and the lighter ones turned. This method of manufacture was changed, about the year 1815, by the adoption of the wooden shoe peg, which was invented in 1811 and soon came into general use. Up to this time little or no progress had been made in the methods of manufacture. The shoemaker sat on his bench, and with scarcely any tools other than a hammer, knife, and wooden shoulder stick, cut, stitched, hammered, and sewed, until the shoe was completed. Previous to the year 1845, which marked the first successful application of machinery to American shoemaking, this industry was in the strictest sense a hand process, and the young man who chose it for his vocation was apprenticed for seven years, and in that time was taught every detail of the art. He was instructed in the preparation of the insole and outsole, depending almost entirely upon his eye for the proper proportions; taught to prepare pegs and drive them, for the pegged shoe was the most common type of footwear in the first

[1] Eighth Census of United States, Manufactures, page 67.

[2] One Hundred Years of American Commerce, published 1895: The Boot and Shoe Trade; William B. Rice, Vol. II, pages 566 to 574.

half of the last century; and familiarized himself with the making of turned and welt shoes, which have always been considered the highest type of shoemaking, requiring exceptional skill of the artisan in channeling the insole and outsole by hand, rounding the sole, sewing the welt, and stitching the outsole. After having served his apprenticeship, it was the custom for the full-fledged shoemaker to start on what was known as "whipping the cat," which meant traveling from town to town, living with a family while making a year's supply of shoes for each member, and then moving on to fill engagements previously made.

The change from which has been evolved our present factory system, began in the latter part of 1700, when a system of sizes had been drafted, and shoemakers more enterprising than their fellows gathered about them groups of workmen, and took upon themselves the dignity of manufacturers. The entire shoe was then made under one roof, and generally from leather that was tanned on the premises; one workman cut the leather, others sewed the uppers, and still others fastened uppers to soles, each workman handling only one part in the process of manufacture. This division of labor was successful from the very start, and soon the method was adopted of sending out the uppers to be sewed by the women and children at their homes. Small shops were numerous throughout certain parts of Massachusetts where the shoemaker, with members of his family or sometimes a neighbor, received the uppers and understock from the factories near by, bottomed the boots and shoes, and returned them to the factories, where they were finished and sent to the market packed in wooden boxes. Thus the industry developed and prospered and was carried on without any further improvement in methods until the introduction of machinery a little more than a half century ago.

Machinery.—The first machine which proved itself of any practical value was the leather-rolling machine, which came into use about 1845 and with which it was said "a man could do in a minute what would require half an hour's hard work with a lapstone and hammer." This was closely followed by the wax-thread sewing machine, which greatly reduced the time required for sewing together the different parts that formed the upper, and the buffing machine, for removing the grain from sole leather. Then came a machine which made pegs very cheaply and with great rapidity, and this in turn was followed by a hand-power machine for driving pegs. In 1855 there was introduced the splitting machine, for reducing sole leather to a uniform thickness. Peg-making and power-pegging machines were soon perfected and there had appeared a dieing-out machine, which was used for cutting soles, taps, and heels by the use of different sized dies. The year 1860 saw the introduction of the McKay sewing machine, which has perhaps done more to revolutionize the manufacture of shoes than any other single machine. The shoe to be sewed was placed over a horn and the sewing was done from the channel in the outsole through the sole and insole. The machine made a loop stich and left a ridge of thread on the inside of the shoe, but it filled the great demand that existed for sewed shoes, and many hundreds of millions of pairs have been made by its use.

At the time of the introduction of the McKay machine inventors were busy in other directions, and, as a result, came the introduction of the cable nailing machine, which was provided with a cable of nails, the head of one being joined to the point of another; these the machine cut into separate nails and drove automatically. At about this time was introduced the screw machine which formed a screw from brass wire, forcing it into the leather and cutting it off automatically. This was the prototype of the "rapid standard screw machine," which is a comparatively recent invention and is very widely used as a sole fastener at the present time on the heavier class of boots and shoes. Very soon thereafter the attention of the trade was attracted to the invention of a New York mechanic for the sewing of soles. This device was particularly intended for the making of turn shoes and afterwards became famous as the Goodyear "turn shoe machine." It was many years before this machine became a commercial success, and mention of its progress is made later.

Closely following the Goodyear invention came the introduction of the first machine used in connection with heeling—a machine which compressed the heel and pricked holes for the nails—and this was soon followed by a machine which automatically drove the nails, the heel having previously been put in place and held by guides on the machine. Other improvements in heeling machines followed with considerable rapidity, and a machine came into use shortly afterwards which not only nailed the heel but was also provided with a hand trimmer, which the operator swung round the heel immediately after nailing. From these have been evolved the heeling machines in use at the present time.

Notable improvements had during this time been made in the Goodyear system, and a machine was made for the sewing of welts which was the foundation of the Goodyear machine now so universally used. This machine sewed from the channel of the insole through upper and welt, uniting all three, and was a machine of the chain-stitch type which left the loop on the outside of the welt. This machine was closely followed by the introduction of one which stitched the outsole, uniting it to the welt by a stitch made from the channel in the outsole, through outsole and welt. This machine afterwards became famous as the Goodyear "rapid outsole lock-stitch machine." The great demand that existed for shoes of this type made it necessary that accessory machines should be invented, and those which prepared the insole, skived the welt, trimmed the insole, rounded and channeled the outsole, as well as a machine which automatically rolled or leveled the shoe, and the stitch separating machine were soon produced. These formed the Goodyear welt system which has been the subject of constant improvement up to the present time

and is now in use wherever shoes of a higher class are made.

At the time the first standard screw machine was attracting attention, the heel-trimming and forepart-trimming machines were brought out. This part of the work had previously been done by the hand workman, using a shave or knife for trimming, and as he was entirely dependent upon the eye for the proper proportions of the finished sole, the work was not often of a very uniform nature. The heel and forepart trimming machines greatly reduced this part of the labor, and their adoption was very rapid.

In the early seventies came a change in a department of shoemaking which, prior to that time, had been regarded as a confirmed hand process. This was the important part of the work known as lasting; and a machine was introduced at that time for doing this work. This machine, as well as those which followed afterwards for a period of twenty years, was known as the bed type of machine, in which the shoe upper was drawn over the last by either friction or pincers, and then tacked by the use of a hand tool. At a comparatively recent period another machine which revolutionized all previous ideas in lasting was introduced. This machine is generally in use at the present time and is known as the "consolidated hand-method lasting machine." It was fitted with pincers which automatically drew the leather round the last, at the same time driving a tack which held it in place. This machine has been so developed that it is now used for the lasting of shoes of every type, from the lowest and cheapest to the highest grade, and it is a machine that shows wonderful mechanical ingenuity.

The perfecting of the lasting machine has been followed recently by the introduction of a machine which performs in a most satisfactory way the difficult process known as "pulling over," which consists of accurately centering the shoe upper on the last and securing it temporarily in position for the work of lasting. The new machine, which is known as the hand-method pulling-over machine, is provided with pincers, which close automatically, gripping the shoe upper at sides and toe. It is fitted with adjustments by which the operator is enabled to quickly center the shoe upper on the last, and, on the pressing of a foot lever, the machine automatically draws the upper closely to the last and secures it in position by tacks, which are also driven by the machine. The introduction of this machine marked a radical change in the one important shoemaking process that had up to this time successfully withstood all attempts at mechanical improvement. At about the time that lasting was first introduced there came the finishing machines, which were used for finishing heel and forepart. These machines were fitted with a tool, which was heated by gas and which practically duplicated the labor of the hand workman in rubbing the edges with a hot tool for the purpose of finishing them. From these early machines have been evolved the edge-setting machines which are in use at the present time.

The latest machine to attract the attention of the trade is one which, in the opinion of those well qualified to judge, is destined to revolutionize the making of that class of shoes which has heretofore been made on the McKay sewing machine. It is known as the "universal double-clinch machine," and forms a fastening of wire, which is taken from a coil corrugated in the machine, and driven, one end being clinched back into the leather of the insole while the driven end is clinched into the leather of the outsole. It is further provided with an attachment which makes the channel in which the fastening is driven and afterwards closes it automatically. It makes a very comfortable, flexible, and durable shoe, and is being rapidly adopted by manufacturers.

At the present time the genius of the American inventor has provided for every detail of shoemaking, even the smallest processes being performed by mechanical devices of some kind. This has naturally made the shoemaker of to-day a specialist, who very seldom knows anything of shoemaking apart from the particular process in the performance of which he is an adept, and from which he earns a livelihood. The American shoe of to-day is the standard production of the world. It is in demand wherever shoes are worn, and although the tools which have made its production possible have been perfected in the face of most discouraging conditions and opposition, they are to-day classed among the most ingenious productions of a wonderfully productive epoch.

Power.—In 1855, William F. Trowbridge, of Feltonville, Mass. (then a part of Marlboro, now the town of Hudson), a partner in the firm of F. Brigham & Co., conceived the idea of driving by horsepower the machines then in use. In a building attached to the factory he established a sweep, around which a horse known for a score of years in that section as the "Old General" provided the first power other than manual which ever drove shoe machinery. For some years prior to that time two or three stout Irishmen had supplied the motive power in this factory. Soon afterwards steam power was used in the factory of John Hill & Co., of Stoneham; and one after another of the larger manufacturers throughout the Eastern states found it necessary to adopt modern methods, so that after the year 1860 there were very few of any pretensions who did not use either steam or water-power to drive their machinery. This opened up the way for numerous improvements. None was of more importance than the Howe sewing machine, which was now brought into general use. Waxed thread sewing machines were also introduced in 1857, by which the uppers of nearly all heavy shoes are stitched together. Buffing machines had been run by foot as far back as 1855, but were now all driven at high speed by power. Power machines for dieing out soles and heels were introduced in 1858.[1]

[1] One Hundred Years of American Commerce, published 1895: The Boot and Shoe Trade; William B. Rice, Vol. II, pages 566 to 574.

The United States Commissioner of Labor, in dealing with boot and shoe manufacture in his report for 1898, has analyzed the different operations through which the factory-made shoe passes in its making, comparing the time needed to carry on the same operation by hand. A portion of the report is reproduced here to show the part that machinery plays in the manufacture of boots and shoes at this time.

To illustrate the difference between hand and machine work, the Commissioner uses seven different and distinct styles and grades of footwear that are fairly representative of the industry. The quantity in each instance is 100 pairs. Following is the list with their unit numbers to which reference is made in making the comparisons.

BOOTS AND SHOES.

Unit No.	Article produced or work accomplished.				Year of production.		Different operations performed.		Different workmen employed.		Time worked.				Labor cost.	
	Name.	Description.		Quantity, pairs.							Hand.		Machine.			
		Hand.	Machine.		Hand.	Machine.	Hand.	Machine.	Hand.	Machine.	Hours.	Minutes.	Hours.	Minutes.	Hand.	Machine.
69...	Boots.	Men's cheap-grade, kip, pegged boots, half-double soles.	Men's cheap-grade, kip, pegged boots, half-double soles.	100...	1859	1895	83	122	2	113	1,436	40.0	154	4.9	$408.5000	$85.4008
70...	Shoes.	Men's fine-grade, calf, welt, lace shoes, single soles, soft box toes.	Men's fine-grade, calf, welt, lace shoes, single soles, soft box toes.	100...	1865	1895	76	146	1	140	2,225	.....	296	38.6	556.2496	74.3904
71...	Shoes.	Men's medium-grade, calf, welt, lace shoes, single soles, soft box toes.	Men's medium-grade, calf, welt, lace shoes, single soles, soft box toes.	100...	1863	1895	73	173	1	371	1,881	40.0	234	36.3	457.9164	59.5461
72...	Shoes.	Men's grain, pegged, brogan shoes, tap soles.	Men's grain, pegged, brogan shoes, tap soles.	100...	1855	1895	45	84	1	98	283	20.0	62	4.6	56.6668	13.8246
73...	Shoes.	Women's fine-grade, kid, welt, button shoes, single soles, patent-leather tips, soft box toes.	Women's fine-grade, kid, welt, button shoes, single soles, patent-leather tips, soft box toes.	100...	1875	1896	102	140	1	140	1,996	40.0	178	29.5	499.1664	54.6535
74...	Shoes.	Women's cheap-grade, kid, turned, lace shoes, single soles, plain toes.	Women's cheap-grade, kid, turned, lace shoes, single soles, plain toes.	100...	1858	1895	67	95	1	85	1,025	20.0	80	22.3	256.3332	18.5882
75...	Shoes.	Women's cheap-grade, grain, pegged, button shoes, single soles, plain toes.	Women's cheap-grade, grain, McKay sewed, button shoes, half-double soles, plain toes.	100...	1868	1895	56	98	2	269	538	20.0	88	10.7	109.3331	20.4435

In discussing the above statement, the Commissioner says:

There is probably none of the older industries of the country in which the introduction of machinery has been more rapid, or has played a more important part in saving time and reducing labor cost, than in that pertaining to the manufacture of boots and shoes. Following the primitive shoemaker, who worked on the bench in his own home making shoes to measure for the community, the first change introduced the old-fashioned shoe shops, which were large enough to accommodate but three or four workmen. Then followed the primitive factory system, in which the greater portion of the work was done by hand and the balance by machinery, and in time this system gradually gave way to the modern factory system in vogue at the present time, in which, with the exception of the upper-cutting department, machinery has almost entirely displaced hand methods.

In 1880, when the subdivision of labor had about reached its limit and the present system had become perfected, efforts were next directed to the production of subordinate parts of the product, which up to that time had received but little attention. This departure has resulted in the gradual and steady growth of a large number of establishments which make a specialty of preparing the rough soles, heels, counters, box toes, welting, etc.

While a large proportion of the operations in each unit are quite similar, there is considerable difference in time. The reason for this will readily be understood when attention is called to the fact that the several units represent entirely different grades of shoes, and that while the description of the machine used, work done, and the occupations may be similar, yet the actual amount of time and energy expended upon each particular part and number of operations required to produce the unit are always regulated by the particular style and quality of the product.

Ordinarily the greatest efficiency is obtained in the production of the cheaper grades of shoes, and a comparison of the aggregate time for the several units shows this to be the case. It frequently happens that in some operations greater efficiency is attained in the higher-grade product. In some operations the time reported appeared somewhat inconsistent, but when the data were submitted for revision and approved by the persons who furnished the information, attention was called to these discrepancies, and in every instance corrections were made or some special reason assigned. In some cases it was due to the difference in the style or quality of the product, or to the use of more modern machinery, while in others the skill of the workmen played an important part, and in a number of instances it was found that where the workmen were paid by the piece, they performed the work in less time than those who were paid by the hour or day. But in every case the data, as published, has been revised and approved by the parties who furnished the original information, and the results shown are considered to be as nearly correct as it is possible to make them.

Lasts and Patterns.—An important feature of the boot and shoe industry is the use of lasts and the system of last measurements adopted by manufacturers. In the early fifties the methods in last and pattern making were very crude, although some of the boots and shoes made in those days were very fine in workmanship, and the amount paid to a workman for simply putting on the bottoms which was done by hand would, at the present time, purchase a good pair of shoes. Lasts were then made only in whole sizes, such a thing as half sizes being unheard of, and were of curious shapes; first, they would have very broad toes, then would go to the other extreme and run out so thin at the end that it was necessary to iron plate them. There were only

two or three styles and widths, and one pattern would fit them all. Many of the women's lasts were made straight. Very little attention was given to the saving of stock in those days, and in the making of patterns one had only to get them large enough. At the present day the saving of stock in the making of patterns is of the greatest importance. The measurements must be absolutely retained. The character and style must be kept up; and the lines, proportions, and graceful curves must receive the most careful attention in all their details, as these are necessary to make up the symmetrical whole. The early method of producing patterns was largely by guess, and some, it is said, still cling to the old way. At one time what was called the English system was considerably used, the method being to take a piece of upper leather, wet and crimp it over the last, and let it dry. This gave the form of the last, and then the pattern was cut from stiff paper allowing for laps, seams, and folds. This method gave good results, providing that the person using it had good taste in putting style into the pattern. Later came the Radii system, which some are using at the present day. Still later came the Soule method, and a book was published describing that system. This method, which is said to produce very good results, is still being used by many pattern manufacturers, and also by local shoe-pattern makers in many of the shoe factories of the country. Some of the most enterprising pattern makers of to-day, however, are using more modern methods. It is conceded that America leads the world in the manufacture of shoes, principally on account of superior style and workmanship; and the American last and pattern makers are entitled to a large degree of credit in establishing the character and style of the American shoe.

Methods of manufacture.—The following gives a fair idea of how a pair of shoes is turned out under modern methods in the factory of to-day: First, the cutters are given tickets describing the style of shoe required, the thickness of sole, and whatever other details are necessary. From this ticket the vamp cutter blocks out the vamps and gives them with the ticket to the upper cutter, who shapes the vamps to the pattern and cuts the tops or quarters which accompany them. The trimming cutter then gets out the side linings, stays, facings, or whatever trimmings are needed. The whole is then made into a bundle and sent to the fitting department. Here they are arranged in classes by themselves. Pieces which are too heavy are run through a splitting machine, and the edges are beveled by means of the skiving machine. Next they are pasted together, care being taken to join them at the marks made for that purpose. After being dried they go into the hands of the machine operators. The different parts go to different machines, each of which is adjusted for its particular work. The completed upper next goes to the sole-leather room, in which department machinery also performs the major part of the work. By the use of the cutting machine the sides of leather are reduced into strips corresponding to the length of the sole required. These strips are passed through a powerful rolling machine, which hardens the leather and removes from its surface all irregularities. They are then shaved down to a uniform thickness, also by machinery, and placed under dies which cut them out in proper form. The smaller pieces are died out in the form of lifts, or heel pieces, which are joined together to the proper thickness and cemented, after which they are put in presses which give them the greatest amount of solidity. The top lift is not added to the heel until after it has been nailed to the shoe. The remaining sole leather is used for shank pieces, rands, and bottom leveling.

For the insole, a lighter grade of leather is used, which, being cut into strips and rolled, is cut by dies to the correct shape, shaved uniformly, and channeled around the under edge for receiving the upper. The counters are died out and skived, by machine, and the welts cut in strips. The uppers and soles are then sent to the bottoming department, where the first operation is that of lasting, the uppers being tacked to the insole. From the laster they go to the machine operator, where the upper, sole, and welt are firmly sewed together by the machine. The bottom is filled and leveled off and the steel shank inserted. Next, the bottom is coated with cement, and the outsole pressed on it by a machine. Thence it is sent through the rounding machine, which trims it and channels the sole for stitching. From there it goes again to the sewing machine, which stitches through the welt outside of the upper. The next step is that of leveling, then heeling, both of which processes are accomplished by machinery. The heels are nailed on in the rough and afterwards trimmed into shape by a machine operating revolving knives; a breasting machine shaping the front of the heel. Still another machine drives in the brass nails and cuts them off flush with the top pieces. The edging machine is next used, which trims the edges of both sole and heel. The sole bottom is then sandpapered, blacked, and burnished by machinery, after which the shoe is cleaned, treed, and packed.[1]

The total floor space occupied by the shoe factories of the United States is practically 24,000,000 square feet, or about 550 acres.

The statistics of boot and shoe manufacture furnish an interesting commentary upon American enterprise, showing, as they do, the evolution of an industry from the smallest beginning and with the crudest appliances to a position that up to recent years equaled in importance that of any of the great industries of the country.

[1] O. W. Boyden in "Boot and Shoe Recorder," page 43, January 1, 1902.

TABLE 9.—COMPARATIVE SUMMARY BY STATES: 1890 AND 1900.

STATES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
United States	1900	1,600	$101,795,238	7,843	$7,757,749	142,922	$59,175,883	$10,766,402	$169,604,054	$261,028,580
	1890	2,082	95,282,311	[1] 5,643	[1] 5,707,931	133,690	60,667,145	9,217,519	118,785,831	220,649,358
California	1900	30	1,257,746	61	55,532	994	456,927	64,373	1,098,184	1,850,511
	1890	56	1,740,175	192	152,500	2,280	1,109,419	141,266	1,524,272	3,395,043
Connecticut	1900	15	789,618	40	38,405	719	297,826	117,372	986,555	1,517,364
	1890	20	683,100	66	73,761	995	455,706	53,666	750,140	1,535,125
Georgia	1900	5	90,700	9	8,200	250	66,000	7,859	255,695	346,259
	1890	3	16,461	4	3,100	22	4,104	1,034	7,917	18,542
Illinois	1900	55	5,351,482	349	409,362	5,553	2,694,959	444,774	7,306,025	11,434,842
	1890	56	3,781,476	160	150,333	3,992	1,896,998	388,001	4,931,986	8,756,824
Indiana	1900	6	542,224	41	41,469	610	151,455	23,106	631,856	864,090
	1890	6	98,065	13	10,126	178	57,079	3,768	90,157	179,936
Iowa	1900	7	506,757	40	35,832	566	191,783	18,718	507,492	786,141
	1890	6	435,066	27	25,750	292	110,100	16,309	286,716	574,378
Kentucky	1900	7	254,382	63	37,075	207	50,819	64,313	456,018	630,358
	1890	11	280,166	29	26,515	296	112,295	33,640	266,210	526,387
Louisiana	1900	12	289,345	27	26,360	397	145,004	21,062	442,002	660,987
	1890	17	293,244	39	36,380	786	328,900	11,653	412,497	968,017
Maine	1900	48	5,148,278	345	345,556	6,432	2,664,672	402,027	8,366,747	12,295,847
	1890	53	4,804,946	215	209,966	6,382	2,868,500	397,394	5,800,682	10,335,342
Maryland	1900	19	499,609	44	50,236	896	289,194	38,480	676,359	1,129,153
	1890	28	868,965	71	61,644	1,182	459,404	30,953	723,052	1,535,761
Massachusetts	1900	640	37,577,630	2,546	2,487,013	58,645	27,745,820	4,826,896	75,751,964	117,115,243
	1890	1,057	44,567,702	2,560	2,569,799	67,374	32,379,899	5,568,233	63,928,182	116,387,900
Michigan	1900	18	1,135,961	77	69,688	1,117	386,074	200,504	1,163,863	1,915,179
	1890	12	972,534	62	86,930	1,309	495,202	89,088	1,209,387	2,065,531
Minnesota	1900	16	2,237,540	146	154,945	2,025	719,281	151,042	2,378,156	3,615,801
	1890	8	1,794,711	88	89,044	1,099	524,978	99,902	1,990,722	2,032,814
Missouri	1900	50	4,183,979	330	346,877	5,915	2,052,114	643,942	7,993,020	11,253,202
	1890	29	3,712,915	97	127,902	2,716	1,119,390	305,194	2,521,027	4,841,004
Nebraska	1900	3	43,500	6	3,300	55	17,302	2,000	47,005	73,210
	[2] 1890									
New Hampshire	1900	67	8,123,481	362	357,046	12,007	4,971,954	453,706	16,569,725	23,405,558
	1890	64	3,956,774	157	132,741	7,912	3,337,167	256,643	6,749,322	11,986,003
New Jersey	1900	84	3,153,255	333	368,968	4,421	1,723,159	391,043	4,210,472	6,978,043
	1890	109	2,811,098	293	282,206	5,162	2,206,652	129,513	3,417,180	7,255,409
New York	1900	223	11,983,239	1,076	1,018,153	15,796	6,138,653	1,251,902	15,611,386	25,585,631
	1890	257	11,950,891	809	930,493	15,361	6,629,641	812,099	12,383,851	23,661,204
North Carolina	1900	3	37,700	3	1,618	40	14,107	1,058	53,297	73,493
	1890	4	118,000	7	5,200	95	26,720	3,473	76,670	155,900
Ohio	1900	81	7,549,142	888	960,890	12,718	3,989,744	637,537	11,074,008	17,920,854
	1890	68	3,176,318	248	269,687	5,743	2,303,393	257,369	4,480,206	8,489,728
Pennsylvania	1900	146	6,860,480	663	579,794	9,144	3,111,113	572,624	8,210,846	13,235,933
	1890	158	5,894,799	386	304,108	7,616	3,094,582	311,684	5,012,096	10,354,850
Rhode Island	1900	5	57,358	17	14,800	9	1,888	27,480	179,986	241,278
	1890	3	27,850	2	1,450	11	4,084	27,631	110,745	158,800
Utah	1900	3	124,267	17	17,432	140	52,558	5,017	156,046	225,986
	[2] 1890									
Vermont	1900	6	478,184	40	32,114	355	128,771	25,970	561,786	792,707
	1890	7	348,827	12	12,624	227	94,766	32,450	346,557	529,486
Virginia	1900	5	641,166	45	50,509	1,153	206,119	35,122	1,159,969	1,452,480
	1890	7	501,661	20	24,474	252	115,414	83,682	874,564	1,279,069
Washington	1900	3	71,071	15	12,060	75	31,461	14,937	102,599	166,423
	[2] 1890									
Wisconsin	1900	40	2,478,626	232	213,600	2,507	821,403	279,913	3,170,921	4,791,684
	1890	32	2,621,606	119	101,622	2,086	774,163	146,345	1,466,557	2,972,233
All other states[3]	1900	8	333,513	28	20,915	176	55,773	43,625	482,066	670,323
	1890	16	329,961	22	19,576	377	158,589	16,469	325,136	656,072

[1] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 10.)
[2] Included "all other states."
[3] Includes establishments distributed as follows: 1900—Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2. 1890—Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas, 3; Utah, 2; Washington, 1.

TABLE 10.—BOOTS AND SHOES:

		United States.	California.	Connecticut.	Georgia.	Illinois.
1	Number of establishments	1,600	30	15	5	55
	Character of organization:					
2	Individual	618	6	5	1	15
3	Firm and limited partnership	580	15	7	2	20
4	Incorporated company	401	9	3	2	20
5	Miscellaneous	1	----	----	----	----
	Capital:					
6	Total	$101,795,233	$1,257,746	$789,618	$90,700	$5,351,482
7	Land	$2,177,426	$13,500	$12,700	$1,500	$101,445
8	Buildings	$7,008,014	$12,450	$17,900	$6,500	$381,098
9	Machinery, tools, and implements	$16,957,305	$343,633	$117,172	$23,400	$931,083
10	Cash and sundries	$75,652,488	$888,163	$641,846	$59,300	$3,937,856
11	Proprietors and firm members	2,080	32	28	10	61
	Salaried officials, clerks, etc.:					
12	Total number	7,843	61	40	9	349
13	Total salaries	$7,757,749	$55,532	$38,405	$8,200	$409,862
	Officers of corporations—					
14	Number	640	14	4	----	26
15	Salaries	$1,295,850	$17,070	$5,560	----	$96,900
	General superintendents, managers, clerks, etc.—					
16	Total number	7,203	47	36	9	323
17	Total salaries	$6,462,399	$38,462	$32,845	$8,200	$312,462
	Men—					
18	Number	5,464	39	28	9	255
19	Salaries	$5,710,279	$34,862	$29,551	$8,200	$278,334
	Women—					
20	Number	1,739	8	8	----	68
21	Salaries	$752,120	$3,600	$3,294	----	$34,128
	Wage-earners, including pieceworkers, and total wages:					
22	Greatest number employed at any one time during the year	169,912	1,211	899	256	6,681
23	Least number employed at any one time during the year	116,436	762	459	246	4,298
24	Average number	142,922	994	719	250	5,553
25	Wages	$59,175,883	$456,927	$297,826	$66,000	$2,694,959
	Men, 16 years and over—					
26	Average number	91,215	720	456	190	3,484
27	Wages	$43,301,430	$372,131	$221,629	$55,600	$1,872,402
	Women, 16 years and over—					
28	Average number	47,186	241	254	40	1,836
29	Wages	$15,068,726	$79,036	$74,932	$7,400	$783,949
	Children, under 16 years—					
30	Average number	4,521	33	9	20	233
31	Wages	$805,727	$5,760	$1,265	$3,000	$38,608
	Average number of wage-earners, including piece workers, employed during each month:					
	Men, 16 years and over—					
32	January	91,197	664	428	187	3,793
33	February	94,122	706	475	186	3,707
34	March	95,299	699	486	189	3,600
35	April	92,758	716	497	189	3,272
36	May	90,433	737	425	189	3,130
37	June	86,990	721	444	191	2,943
38	July	87,224	649	403	191	3,772
39	August	92,712	747	491	189	3,812
40	September	93,526	782	488	191	3,861
41	October	92,045	803	472	196	3,245
42	November	87,808	649	424	194	3,414
43	December	90,465	770	436	191	3,258
	Women, 16 years and over—					
44	January	47,914	241	206	40	2,089
45	February	49,304	255	220	40	2,063
46	March	49,757	239	234	40	1,749
47	April	47,840	255	240	40	1,612
48	May	46,767	252	225	40	1,592
49	June	44,693	223	262	40	1,519
50	July	44,684	198	263	40	2,104
51	August	47,647	254	315	40	2,157
52	September	47,920	253	297	40	2,156
53	October	47,166	266	284	40	1,626
54	November	45,536	216	268	40	1,718
55	December	47,005	240	229	40	1,658
	Children, under 16 years—					
56	January	4,529	30	7	20	235
57	February	4,589	32	9	20	222
58	March	4,672	35	12	20	243
59	April	4,524	33	12	20	243
60	May	4,441	31	11	20	231
61	June	4,389	30	10	20	190
62	July	4,436	31	8	20	245
63	August	4,723	37	10	20	262
64	September	4,655	37	11	20	259
65	October	4,493	38	8	20	203
66	November	4,357	25	6	20	246
67	December	4,441	34	7	20	218
	Average number of employees by classes:					
68	Cutters	19,900	128	78	23	661
69	Stitchers	41,870	288	165	35	1,702
70	Lasters	19,247	155	67	25	754
71	Bottomers	27,558	205	185	101	1,248
72	Edgemakers	6,432	47	31	12	324
73	Finishers	15,891	73	74	43	418
	Miscellaneous expenses:					
74	Total	$10,766,402	$64,373	$117,372	$7,859	$444,774
75	Rent of works	$1,000,689	$22,388	$7,691	$1,810	$52,418
76	Taxes, not including internal-revenue	$382,426	$4,874	$1,979	$1,024	$15,268
77	Rent of offices, insurance, interest, and all sundry expenses not hitherto included	$7,681,339	$36,961	$72,702	$5,025	$326,050
78	Contract work	$1,751,948	$200	$35,000	----	$51,038

BY STATES, 1900.

Indiana.	Iowa.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	
6	7	7	12	48	19	640	13	16	50	1
2	1	1	7	9	9	286	2	5	6	2
	2	4	5	14	6	267	6	4	8	3
4	4	2		25	4	86	5	7	36	4
						1				5
$542,224	$506,757	$254,382	$289,345	$5,148,278	$499,609	$37,577,630	$1,135,961	$2,287,540	$4,183,979	6
$3,000	$12,100		$13,000	$135,285	$12,500	$674,179	$82,148		$89,250	7
$13,399	$57,840		$25,700	$540,950	$26,800	$2,360,203	$200,150	$2,100	$456,877	8
$97,157	$86,471	$44,456	$72,933	$663,326	$167,326	$5,750,238	$150,800	$337,236	$804,568	9
$428,668	$350,346	$209,926	$177,712	$3,808,717	$292,983	$28,793,010	$702,863	$1,898,204	$2,833,284	10
2	7	12	20	41	26	897	19	13	25	11
41	40	63	27	345	44	2,546	77	146	330	12
$41,469	$35,832	$37,075	$26,360	$345,556	$50,236	$2,487,013	$69,688	$154,946	$346,877	13
8	2	2		44	3	146	3	4	47	14
$14,000	$1,980	$3,280		$89,314	$7,700	$352,163	$6,440	$4,040	$76,513	15
33	38	61	27	301	41	2,400	74	142	283	16
$27,469	$33,852	$33,795	$26,360	$256,242	$42,536	$2,134,850	$63,248	$150,905	$270,364	17
29	33	57	25	225	38	1,508	56	186	243	18
$26,169	$32,012	$32,195	$25,660	$224,087	$41,252	$1,737,419	$55,959	$147,758	$249,823	19
4	5	4	2	76	3	892	18	6	40	20
$1,300	$1,840	$1,600	$700	$32,155	$1,284	$397,431	$7,289	$3,147	$21,041	21
637	632	256	431	7,760	934	72,261	1,378	2,319	7,040	22
555	489	165	370	4,808	825	45,579	915	1,843	4,766	23
610	566	207	397	6,432	896	58,645	1,117	2,025	5,915	24
$151,455	$191,783	$50,819	$145,004	$2,664,672	$289,194	$27,745,820	$386,074	$719,231	$2,052,114	25
434	272	94	326	4,346	597	39,022	691	1,438	3,256	26
$114,988	$115,659	$30,629	$133,500	$2,014,993	$220,030	$20,878,248	$272,308	$536,988	$1,356,079	27
170	227	69	37	2,064	285	18,636	417	566	2,207	28
$35,867	$65,557	$14,664	$8,108	$645,694	$67,264	$6,686,138	$112,684	$179,428	$623,281	29
6	67	44	34	22	14	987	9	21	452	30
$600	$10,567	$5,526	$3,396	$3,985	$1,900	$186,434	$1,182	$2,815	$72,754	31
441	269	84	343	4,549	606	38,195	748	1,485	3,235	32
437	273	97	341	4,702	615	39,888	776	1,477	3,311	33
429	285	99	344	4,620	613	40,809	779	1,462	3,351	34
408	279	103	344	4,128	606	40,237	672	1,398	3,344	35
434	270	102	326	4,135	579	38,958	678	1,297	3,442	36
443	266	64	279	4,295	578	37,677	698	1,193	3,049	37
448	273	91	288	4,218	602	37,445	838	1,491	3,012	38
447	279	107	330	4,272	601	39,748	765	1,525	3,129	39
432	252	111	349	4,349	609	40,112	794	1,512	8,178	40
409	262	99	328	4,292	606	39,619	747	1,491	3,305	41
434	280	91	319	4,177	567	37,441	589	1,468	3,245	42
444	271	79	318	4,415	580	38,132	706	1,459	3,476	43
181	225	63	39	2,234	280	18,523	468	571	2,212	44
182	235	71	38	2,260	287	19,335	474	579	2,223	45
178	240	74	38	2,231	289	19,840	472	577	2,374	46
168	230	76	39	1,921	283	19,284	384	563	2,277	47
126	222	71	37	2,024	273	18,760	388	536	2,308	48
157	238	49	25	2,048	284	17,711	447	477	2,082	49
175	227	63	31	1,977	284	17,848	190	586	2,088	50
177	228	78	37	2,014	292	18,498	475	605	2,110	51
172	218	83	40	2,017	297	18,807	479	591	2,131	52
163	214	69	40	1,998	285	18,828	420	583	2,233	53
176	224	68	40	1,976	275	18,194	345	559	2,162	54
181	229	63	40	2,077	291	18,509	459	568	2,342	55
6	68	42	35	18	14	948	9	16	471	56
6	70	46	36	21	14	970	9	16	463	57
6	72	51	36	21	14	993	9	18	458	58
6	75	55	36	21	14	948	9	18	452	59
6	64	45	35	21	12	960	9	21	480	60
6	63	30	23	24	14	1,042	9	26	402	61
6	69	46	24	24	14	1,051	7	23	409	62
6	72	57	36	24	14	1,069	9	27	424	63
6	60	57	36	25	14	1,022	9	24	432	64
6	62	42	36	21	14	953	9	24	475	65
9	69	32	36	21	12	960	9	22	448	66
9	64	27	36	23	14	928	9	17	508	67
69	73	26	47	973	92	8,586	191	333	832	68
189	97	58	93	1,845	243	16,352	383	621	2,035	69
68	61	32	62	780	116	8,147	142	134	695	70
82	127	29	120	1,156	129	10,907	238	689	1,309	71
20	10	9	15	302	42	2,705	28	37	310	72
42	33	12	49	600	128	6,750	142	223	730	73
$23,106	$18,718	$64,313	$21,062	$402,027	$38,480	$4,826,896	$200,504	$151,042	$643,942	74
$520	$1,732	$3,294	$4,405	$13,297	$8,168	$399,893	$3,455	$28,936	$48,800	75
$1,199	$2,174	$14,397	$1,403	$20,380	$1,351	$192,577	$4,385	$8,060	$11,920	76
$21,887	$14,812	$4,842	$15,254	$367,350	$28,961	$3,252,789	$192,404	$100,086	$258,922	77
		$41,780		$1,000		$981,637	$260	$13,960	$324,300	78

TABLE 10.—BOOTS AND SHOES:

		United States.	California.	Connecticut.	Georgia.	Illinois.
	Materials used:					
79	Total cost	$169,604,054	$1,098,184	$986,555	$255,695	$7,306,025
80	Sole leather, pounds	178,504,837	1,631,874	799,381	341,000	9,187,088
81	Cost	$39,192,300	$354,251	$179,610	$78,900	$1,907,169
82	Split leather, pounds	15,817,460	34,490	116,426	100,000	134,280
83	Cost	$3,109,729	$8,131	$27,163	$20,000	$30,016
84	Calf and kip skins, pounds	10,569,581	228,298	32,645	63,120	650,972
85	Cost	$7,069,408	$119,462	$22,579	$21,920	$464,286
86	Grain and other side leather, square feet	131,542,365	717,843	573,155	534,000	4,035,946
87	Cost	$15,950,818	$109,282	$69,044	$54,800	$542,151
88	Goatskins, square feet	233,050,841	557,046	1,076,075	300,000	7,499,820
89	Cost	$35,398,638	$93,696	$206,745	$30,000	$1,255,324
90	All other upper leather, square feet	98,866,823	824,998	257,365	45,000	5,341,480
91	Cost	$15,578,659	$150,178	$72,237	$6,000	$817,659
92	Sheep and leather linings and trimmings	$7,429,156	$30,863	$66,680	$5,500	$305,016
93	Cut soles, taps, heels, etc., purchased	$17,248,898	$59,125	$87,008	$2,325	$537,954
94	Findings, purchased	$12,902,750	$93,497	$90,058	$19,400	$707,851
95	Fuel	$613,410	$6,633	$4,438	$1,070	$17,985
96	Rent of power and heat	$345,518	$4,888	$2,225	$180	$20,155
97	Mill supplies	$466,458	$2,662	$1,929	$2,145	$19,321
98	All other materials	$12,979,999	$58,596	$148,049	$6,980	$625,989
99	Freight	$1,318,313	$6,925	$8,190	$6,475	$55,119
	Products:					
100	Total value	$261,028,580	$1,850,511	$1,517,364	$346,259	$11,434,842
	Men's boots and shoes—					
101	Number of pairs	68,042,839	582,966	365,949	175,700	3,275,957
102	Value	$108,705,938	$1,225,597	$499,695	$203,500	$6,047,520
	Boys' and youths' boots and shoes—					
103	Number of pairs	21,080,479	100,263	59,446	21,000	469,839
104	Value	$20,799,297	$140,371	$85,122	$20,900	$502,390
	Women's boots and shoes—					
105	Number of pairs	65,372,653	239,583	308,557	106,900	1,952,473
106	Value	$82,504,303	$440,840	$616,358	$95,160	$2,721,582
	Misses' and children's boots and shoes—					
107	Number of pairs	42,043,202	8,583	33,563	22,000	921,207
108	Value	$30,319,611	$11,327	$80,094	$13,500	$772,518
	Men's, boys', and youths' slippers—					
109	Number of pairs	4,456,965	30,014	5,046	7,500	55,420
110	Value	$2,812,213	$20,402	$6,811	$6,000	$47,610
	Women's, misses', and children's slippers, oxfords, and low cuts—					
111	Number of pairs	12,655,876	8,577	10,095	8,000	177,700
112	Value	$10,146,393	$3,041	$7,285	$6,000	$174,377
	All other kinds—					
113	Number of pairs	5,583,405	.....	5,242	.....	479,380
114	Value	$2,491,511	.....	$2,900	.....	$538,919
115	All other products	$2,175,788	$233	$266,500	.....	$621,310
116	Amount received for custom or contract work	$1,073,576	$8,700	$2,599	$1,199	$8,526
	Maximum daily capacity of factory:					
117	Number of pairs	1,301,326	5,789	5,222	1,410	45,542
	Total floor space in factory:					
118	Square feet	23,799,973	145,654	135,724	33,200	903,650
	Comparison of products:					
119	Number of establishments reporting for both years	1,411	28	14	5	47
120	Value for census year	$253,152,430	$1,845,438	$1,509,290	$346,259	$11,241,005
121	Value for preceding business year	$228,305,842	$2,522,329	$1,527,635	$179,520	$10,009,673
	Power:					
122	Number of establishments reporting	1,285	15	13	4	36
123	Total horsepower	51,073	304	379	51	2,470
	Owned—					
	Engines—					
124	Steam, number	633	3	9	2	18
125	Horsepower	34,816	150	199	45	1,429
126	Gas or gasoline, number	90	3	1	.....	3
127	Horsepower	1,156	26	6	.....	80
128	Water wheels, number	57	.....	1	.....	5
129	Horsepower	2,390	.....	15	.....	160
130	Electric motors, number	117	.....	.....	.....	3
131	Horsepower	1,629	.....	.....	.....	35
	Other power—					
132	Number	5	.....	.....	.....	.....
133	Horsepower	91	.....	.....	.....	.....
	Rented—					
134	Electric, horsepower	8,572	108	159	6	322
135	Other kind, horsepower	7,419	20	.....	.....	460
136	Furnished to other establishments, horsepower	1,023	.....	.....	.....	3
	Establishments classified by number of persons employed, not including proprietors and firm members:					
137	Total number	1,600	30	15	5	55
138	No employees	24	2	.....	.....	5
139	Under 5	166	1	1	1	5
140	5 to 20	345	14	2	2	10
141	21 to 50	311	3	6	1	8
142	51 to 100	275	8	4	.....	5
143	101 to 250	277	1	1	1	7
144	251 to 500	147	1	1	.....	0
145	501 to 1,000	39	.....	.....	.....	2
146	Over 1,000	16	.....	.....	.....	1

BY STATES, 1900—Continued.

Indiana.	Iowa.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	
$631,856	$507,492	$456,018	$442,002	$8,366,747	$676,359	$75,751,964	$1,163,863	$2,378,166	$7,993,026	79
967,000	254,141	483,280	616,856	11,042,219	487,793	79,038,736	1,572,210	3,477,515	8,088,206	80
$212,163	$63,144	$105,229	$162,850	$2,288,904	$147,478	$16,626,246	$357,878	$809,088	$1,937,294	81
61,400	2,215	30,269	9,925	608,231	13,270	9,905,569	10,603	54,301	118,561	82
$15,823	$950	$6,052	$2,184	$119,674	$3,023	$1,865,958	$3,489	$10,521	$22,732	83
500	51,899	800	6,091	460,988	25,653	5,110,293	88,209	306,750	679,707	84
$350	$35,543	$500	$3,971	$283,600	$18,313	$3,628,419	$61,007	$47,380	$353,269	85
901,366	109,612	1,177,212	448,661	9,404,521	68,875	60,717,718	758,402	2,531,119	3,382,692	86
$108,804	$17,779	$158,766	$62,721	$1,095,744	$11,965	$7,294,397	$106,178	$317,355	$458,668	87
451,660	1,073,073	409,013	358,514	9,951,308	1,348,383	99,846,695	1,992,966	2,707,161	12,625,158	88
$58,049	$181,543	$54,752	$66,413	$1,421,795	$217,570	$14,500,991	$354,252	$180,395	$1,994,631	89
632,450	43,726	51,500	338,690	4,509,510	452,799	47,344,310	813,425	1,313,171	2,948,274	90
$93,648	$6,679	$9,850	$50,531	$585,225	$80,112	$7,278,400	$56,887	$197,180	$842,395	91
$23,137	$20,878	$14,589	$13,168	$300,311	$33,560	$3,372,122	$18,635	$50,401	$372,862	92
$31,824	$94,913	$31,502	$6,209	$566,285	$68,260	$8,876,400	$14,472	$44,545	$761,042	93
$47,400	$32,473	$34,050	$44,592	$629,141	$56,813	65,578,443	$74,603	$205,761	$684,522	94
$3,120	$4,306	$59	$1,289	$33,094	$3,949	$264,902	$6,497	$11,966	$31,165	95
.....	$357	$1,555	$5,107	$10,413	$1,372	$155,155	$1,555	$3,376	$25,896	96
$750	$2,431	$844	$780	$32,628	$2,187	$85,959	$2,867	$9,006	$30,369	97
$26,665	$37,780	$33,765	$16,729	$930,252	$26,671	$5,764,500	$99,404	$103,028	$369,251	98
$10,123	$8,716	$9,505	$5,458	$69,681	$5,086	$465,077	$11,144	$28,204	$109,999	99
$864,090	$786,141	$630,358	$660,987	$12,295,847	$1,129,153	$117,115,243	$1,915,179	$3,615,801	$11,258,202	100
279,000	88,293	1,000	366,040	6,134,208	105,570	40,004,809	325,991	1,336,793	3,033,759	101
$383,000	$182,502	$3,500	$583,029	$7,810,471	$295,677	$59,628,707	$636,944	$2,024,910	$5,458,709	102
154,428	24,162	.....	17,900	1,421,682	26,872	10,665,620	107,337	339,375	425,979	103
$174,290	$30,955	.....	$31,775	$1,416,844	$52,340	$9,975,116	$143,840	$464,521	$524,689	104
120,000	226,153	469,220	11,400	2,208,873	356,299	24,500,767	542,993	423,276	3,120,911	105
$150,000	$362,246	$502,970	$19,200	$2,294,565	$593,235	$28,034,460	$1,004,377	$689,095	$3,963,481	106
150,000	29,523	184,969	1,000	349,267	191,210	14,509,745	71,948	228,967	1,159,799	107
$150,000	$32,373	$123,188	$1,650	$261,919	$136,186	$9,170,140	$79,210	$291,643	$1,059,037	108
.....	874	.....	1,000	6,144	10,212	3,282,260	30,282	10,014	10,296	109
.....	$716	.....	$1,100	$4,944	$8,338	$2,057,672	$22,216	$11,131	$9,755	110
8,175	39,359	.....	50,088	465,732	38,700	8,769,854	15,000	59,049	192,503	111
$5,000	$39,359	.....	$19,324	$302,195	$38,127	$6,881,058	$14,000	$53,686	$164,519	112
.....	43,294	.....	.....	162,924	16,250	999,490	18,247	59,408	254,000	113
.....	$68,150	.....	.....	$180,339	$5,000	$360,086	$9,508	$49,805	$55,215	114
.....	$69,840	.....	$2,109	$74,470	.....	$186,386	$2,971	$15,000	$22,087	115
$1,800	.....	$700	$2,800	$100	$250	$821,618	$2,118	$16,010	$760	116
2,740	2,880	2,945	2,652	73,899	3,327	690,864	8,086	14,550	51,876	117
101,900	91,142	75,350	78,006	1,269,365	104,090	10,118,725	199,313	348,496	1,094,837	118
6	6	6	11	42	16	579	9	15	36	119
$864,090	$784,175	$600,358	$608,362	$11,934,167	$1,033,030	$115,122,299	$1,772,286	$3,614,501	$9,646,720	120
$630,549	$746,479	$458,068	$504,280	$11,199,426	$922,801	$104,606,916	$1,604,591	$3,203,400	$8,299,264	121
5	7	5	9	44	14	537	11	15	46	122
180	243	122	146	3,161	240	18,411	417	847	4,003	123
3	6	1	1	31	4	282	4	8	33	124
145	213	80	50	2,177	147	13,250	255	740	2,425	125
2	.....	.....	2	2	6	7	4	3	4	126
35	.....	.....	7	39	57	32	92	22	46	127
.....	.....	.....	.....	13	.....	3	.....	.....	4	128
.....	.....	.....	.....	590	.....	130	.....	.....	85	129
.....	1	.....	.....	3	.....	8	.....	9	23	130
.....	10	.....	.....	78	.....	263	.....	39	454	131
.....	.....	.....	.....	1	.....	2	.....	.....	.....	132
.....	.....	.....	.....	6	.....	55	.....	.....	.....	133
.....	20	42	89	168	3	775	60	43	385	134
.....	.....	.....	.....	103	33	3,906	10	8	608	135
.....	.....	.....	.....	99	.....	381	.....	5	105	136
6	7	7	12	48	19	640	13	16	50	137
.....	.....	.....	.....	1	1	6	.....	.....	.....	138
1	1	1	.....	2	2	71	2	.....	3	139
1	1	1	4	4	4	132	.....	5	11	140
.....	1	3	4	9	5	130	5	2	8	141
.....	1	1	3	4	4	96	3	3	11	142
3	2	1	1	16	3	112	2	1	8	143
1	1	.....	.....	11	.....	73	.....	3	6	144
.....	.....	.....	.....	1	.....	12	1	2	2	145
.....	.....	.....	.....	.....	.....	8	.....	.....	1	146

TABLE 10.—BOOTS AND SHOES:

		Nebraska.	New Hampshire.	New Jersey.	New York.	North Carolina.
1	Number of establishments	3	67	84	223	3
	Character of organization:					
2	Individual		18	36	111	1
3	Firm and limited partnership	3	30	23	68	
4	Incorporated company		19	25	44	2
5	Miscellaneous					
	Capital:					
6	Total	$43,500	$8,123,481	$3,153,255	$11,983,239	$37,700
7	Land	$1,000	$124,187	$68,655	$285,885	$200
8	Buildings	$9,000	$473,961	$296,541	$623,594	$1,850
9	Machinery, tools, and implements	$8,700	$1,063,569	$736,375	$2,362,396	$7,450
10	Cash and sundries	$24,800	$6,461,764	$2,051,684	$8,711,414	$28,200
11	Proprietors and firm members	6	86	86	264	1
	Salaried officials, clerks, etc.:					
12	Total number	6	362	333	1,076	3
13	Total salaries	$3,300	$357,046	$368,968	$1,018,153	$1,618
	Officers of corporations:					
14	Number		25	40	82	2
15	Salaries		$54,776	$93,432	$139,983	$918
	General superintendents, managers, clerks, etc.—					
16	Total number	6	337	293	994	1
17	Total salaries	$3,300	$302,270	$275,536	$878,170	$700
	Men—					
18	Number	6	237	241	811	1
19	Salaries	$3,300	$259,687	$252,173	$802,984	$700
	Women—					
20	Number		100	52	183	
21	Salaries		$42,583	$23,363	$75,186	
	Wage-earners, including pieceworkers, and total wages:					
22	Greatest number employed at any one time during the year	121	14,014	5,854	18,143	45
23	Least number employed at any one time during the year	33	9,874	3,958	13,398	45
24	Average number	55	12,007	4,421	15,796	40
25	Wages	$17,302	$4,971,954	$1,723,159	$6,138,653	$14,107
	Men, 16 years and over—					
26	Average number	18	7,755	2,740	9,754	40
27	Wages	$8,812	$3,540,273	$1,259,819	$4,465,363	$14,107
	Women, 16 years and over—					
28	Average number	37	3,866	1,497	5,483	
29	Wages	$8,490	$1,334,143	$427,782	$1,584,992	
	Children, under 16 years—					
30	Average number		386	184	559	
31	Wages		$97,538	$35,608	$88,298	
	Average number of wage-earners, including pieceworkers, employed during each month:					
	Men, 16 years and over—					
32	January	9	8,014	2,610	9,675	45
33	February	9	8,089	2,928	10,023	45
34	March	9	8,187	2,971	10,187	31
35	April	11	7,816	2,974	9,832	31
36	May	18	7,623	2,925	9,808	31
37	June	17	7,422	2,676	9,511	45
38	July	20	7,555	2,177	9,134	45
39	August	25	7,721	2,704	9,771	45
40	September	25	7,631	2,929	9,986	45
41	October	25	7,620	2,831	9,893	45
42	November	25	7,386	2,472	9,374	45
43	December	27	8,002	2,685	9,799	27
	Women, 16 years and over—					
44	January	12	4,006	1,429	5,498	
45	February	12	4,114	1,597	5,671	
46	March	12	4,133	1,625	5,737	
47	April	13	3,967	1,605	5,484	
48	May	35	3,833	1,576	5,407	
49	June	38	3,724	1,471	5,293	
50	July	43	3,709	1,224	5,192	
51	August	58	3,715	1,580	5,612	
52	September	64	3,737	1,561	5,710	
53	October	62	3,727	1,506	5,567	
54	November	62	3,627	1,348	5,163	
55	December	33	4,095	1,442	5,457	
	Children, under 16 years—					
56	January		382	171	585	
57	February		400	182	582	
58	March		401	202	587	
59	April		364	205	566	
60	May		370	198	512	
61	June		373	168	572	
62	July		386	142	553	
63	August		400	166	592	
64	September		372	205	586	
65	October		377	201	554	
66	November		397	195	466	
67	December		405	173	557	
	Average number of employees, by classes:					
68	Cutters	2	1,862	584	2,002	9
69	Stitchers	8	3,494	1,112	4,668	7
70	Lasters	4	1,774	637	1,891	7
71	Bottomers	2	1,933	791	3,478	10
72	Edge makers	2	457	245	683	2
73	Finishers	2	1,353	463	1,622	4
	Miscellaneous expenses:					
74	Total	$2,000	$453,706	$391,043	$1,251,902	$1,058
75	Rent of works	$250	$32,530	$19,170	$204,153	$80
76	Taxes, not including internal revenue	$205	$17,289	$8,567	$23,563	$128
77	Rent of offices, insurance, interest, and all sundry expenses not hitherto included.	$1,545	$398,957	$335,220	$924,075	$850
78	Contract work		$4,930	$28,086	$100,111	

BY STATES, 1900—Continued.

Ohio.	Pennsylvania.	Rhode Island.	Utah.	Vermont.	Virginia.	Washington.	Wisconsin.	All other states.[1]	
81	146	5	3	6	5	3	40	8	1
16	63	4	----	2	----	----	10	2	2
27	56	----	1	----	2	1	8	1	3
38	27	1	2	4	3	2	22	5	4
----	----	----	----	----	----	----	----	----	5
$7,549,142	$6,860,480	$57,358	$124,267	$478,184	$641,166	$71,071	$2,478,626	$333,513	6
$168,950	$279,602	----	$4,750	$4,800	$2,000	----	$80,586	$6,304	7
$464,713	$660,800	----	$33,036	$42,393	$7,932	----	$261,290	$31,437	8
$1,180,322	$1,309,513	$6,200	$21,743	$77,596	$47,084	$14,715	$462,255	$69,638	9
$5,735,157	$4,611,065	$51,158	$64,788	$353,395	$584,200	$56,356	$1,669,545	$226,134	10
87	209	4	2	2	5	2	29	4	11
888	663	17	17	40	45	15	282	28	12
$960,890	$579,794	$14,800	$17,482	$32,114	$50,509	$12,060	$218,600	$20,915	13
79	45	----	3	6	4	3	40	3	14
$173,953	$78,951	----	$3,500	$5,700	$10,275	$7,080	$47,022	$4,800	15
809	618	17	14	34	41	7	192	25	16
$786,937	$500,843	$14,800	$13,932	$26,414	$40,234	$4,980	$166,578	$16,115	17
662	550	17	13	26	36	6	157	20	18
$731,032	$473,450	$14,800	$13,452	$23,329	$38,650	$4,530	$154,635	$14,776	19
147	68	----	1	8	5	1	35	5	20
$55,905	$27,393	----	$480	$3,085	$1,584	$450	$11,943	$1,339	21
14,004	10,479	14	159	471	1,274	116	2,815	208	22
11,344	7,862	11	117	269	1,079	49	2,192	135	23
12,718	9,144	9	140	355	1,153	75	2,507	176	24
$3,989,744	$3,111,118	$1,888	$52,558	$128,771	$206,119	$31,461	$821,403	$55,773	25
7,289	5,291	4	98	199	1,021	50	1,494	136	26
$2,709,382	$2,157,786	$1,040	$43,275	$86,719	$187,214	$23,990	$569,246	$44,220	27
4,781	3,239	4	40	155	127	22	849	37	28
$1,175,153	$838,589	$728	$8,530	$41,952	$18,531	$7,011	$227,820	$11,103	29
648	614	1	2	1	5	3	164	3	30
$105,209	$114,738	$120	$753	$100	$874	$460	$24,337	$450	31
7,475	5,286	4	85	194	1,002	58	1,577	136	32
7,542	5,493	4	100	189	965	58	1,540	146	33
7,548	5,595	4	98	182	973	56	1,546	148	34
7,307	5,565	4	98	178	988	54	1,509	148	35
7,159	5,326	4	97	174	927	54	1,435	150	36
6,714	4,911	4	96	152	954	29	1,466	152	37
7,427	4,785	4	99	167	1,077	49	1,458	6	38
7,515	5,407	4	100	206	1,089	54	1,487	142	39
7,232	5,502	5	101	228	1,100	51	1,539	142	40
7,196	5,394	4	102	243	1,046	58	1,572	147	41
7,093	5,164	5	102	232	1,094	44	1,380	150	42
7,258	5,065	4	102	244	1,048	46	1,471	157	43
5,000	3,312	4	32	158	142	26	887	36	44
5,017	3,347	4	39	155	141	26	879	40	45
4,962	3,431	4	39	148	139	23	888	41	46
4,766	3,375	4	39	148	137	22	866	42	47
4,647	3,266	4	39	154	88	22	799	43	48
4,378	3,036	4	37	138	134	13	826	44	49
4,935	2,896	4	41	142	133	20	825	1	50
4,925	3,286	4	43	154	133	21	847	39	51
4,710	3,274	4	43	164	133	26	874	39	52
4,724	3,262	4	43	168	108	25	883	43	53
4,636	3,260	4	43	173	131	17	772	44	54
4,668	3,170	3	43	164	106	17	843	38	55
667	600	1	2	1	5	3	190	3	56
668	625	1	2	1	5	3	183	3	57
671	633	1	2	1	5	3	175	3	58
657	613	1	2	1	5	3	162	3	59
629	628	1	2	1	3	3	145	3	60
619	597	1	2	1	5	----	159	3	61
668	541	----	1	1	4	3	160	----	62
677	645	----	1	1	5	3	168	3	63
651	652	----	2	1	5	4	162	3	64
643	623	----	2	1	5	5	168	3	65
608	606	----	2	1	5	6	153	3	66
618	608	1	2	1	3	6	150	3	67
1,726	1,009	----	12	60	228	10	266	18	68
4,460	2,476	3	44	115	336	21	988	37	69
2,008	1,059	1	22	27	149	9	384	37	70
2,257	1,643	1	25	24	170	20	708	21	71
589	355	----	11	15	41	6	129	6	72
1,390	696	2	15	56	184	8	262	17	73
$637,537	$572,624	$27,480	$5,017	$25,970	$35,122	$14,937	$279,913	$43,625	74
$77,084	$48,958	$317	----	$1,060	$760	$2,958	$15,881	$786	75
$28,256	$10,193	$145	$1,077	$547	$1,357	$206	$8,913	$989	76
$532,125	$509,079	$5,867	$3,940	$24,318	$33,005	$11,773	$143,185	$9,905	77
$72	$4,899	$21,151	----	$45	----	----	$112,034	$31,945	78

[1] Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2.

TABLE 10.—BOOTS AND SHOES:

		Nebraska.	New Hampshire.	New Jersey.	New York.	North Carolina.
	Materials used:					
79	Total cost	$47,005	$16,569,725	$4,210,472	$15,611,386	$53,297
80	Sole leather, pounds	600	18,792,790	2,568,403	14,138,458	81,202
81	Cost	$125	$3,786,370	$749,953	$3,177,284	$17,436
82	Split leather, pounds	.....	2,076,746	41,544	1,106,436	8,760
83	Cost	.....	$454,849	$8,665	$226,069	$1,750
84	Calf and kip skins, pounds	.....	578,064	486,950	450,590	1,037
85	Cost	.....	$361,324	$383,353	$353,436	$343
86	Grain and other side leather, square feet	900	22,437,269	1,088,555	8,049,495	120,152
87	Cost	$150	$2,538,321	$137,867	$997,944	$13,619
88	Goatskins, square feet	.....	20,416,313	8,295,255	21,785,985	.....
89	Cost	.....	$2,420,750	$1,177,131	$3,864,327	.....
90	All other upper leather, square feet	.....	11,141,108	2,454,725	9,158,562	65,000
91	Cost	.....	$1,425,983	$491,902	$1,694,714	$9,000
92	Sheep and leather linings and trimmings	$7,300	$684,096	$147,288	$662,775	$1,500
93	Cut soles, tops, heels, etc., purchased	$1,000	$1,861,759	$502,782	$1,948,470	$800
94	Findings, purchased	$6,580	$1,398,043	$291,897	$1,120,682	$3,752
95	Fuel	.....	$63,799	$24,537	$45,025	$118
96	Rent of power and heat	$797	$7,982	$1,000	$58,187	$50
97	Mill supplies	$20	$26,525	$11,902	$89,287	$75
98	All other materials	$29,075	$1,408,783	$258,352	$1,282,593	$3,700
99	Freight	$2,008	$131,141	$23,843	$90,643	$1,554
	Products:					
100	Total value	$73,210	$23,405,558	$6,978,043	$25,585,631	$73,493
	Men's boots and shoes—					
101	Number of pairs	20,300	2,716,486	599,325	3,870,221	39,654
102	Value	$22,860	$8,819,628	$2,168,635	$5,691,186	$46,447
	Boys' and youths' boots and shoes—					
103	Number of pairs	.....	3,758,750	156,977	1,402,066	9,842
104	Value	.....	$2,902,094	$188,041	$1,909,081	$10,026
	Women's boots and shoes—					
105	Number of pairs	.....	9,064,178	845,575	5,896,367	7,935
106	Value	.....	$7,656,405	$1,065,363	$11,098,205	$9,725
	Misses' and children's boots and shoes—					
107	Number of pairs	.....	4,505,367	4,257,280	5,352,693	3,569
108	Value	.....	$3,154,316	$3,050,119	$4,356,000	$2,857
	Men's, boys', and youths' slippers—					
109	Number of pairs	.....	466,466	37,740	435,215	.....
110	Value	.....	$238,578	$64,605	$250,514	.....
	Women's, misses', and children's slippers—					
111	Number of pairs	.....	661,444	183,547	1,232,195	.....
112	Value	.....	$407,617	$131,343	$1,179,788	.....
	All other kinds—					
113	Number of pairs	.....	.....	796,640	1,265,166	.....
114	Value	.....	.....	$298,815	$446,019	.....
115	All other products	.....	$172,858	$797	$617,760	$3,750
116	Amount received for custom or contract work	$50,350	$54,062	$10,325	$37,128	$688
	Maximum daily capacity of factory:					
117	Number of pairs	20	54,120	40,717	115,885	261
	Total floor space in factory:					
118	Square feet	1,200	713,140	587,641	4,083,407	3,980
	Comparison of products:					
119	Number of establishments reported for both years	2	64	69	208	3
120	Value for census year	$72,500	$23,361,332	$6,288,295	$25,244,246	$73,493
121	Value for preceding business year	$63,500	$19,674,065	$5,870,319	$22,643,175	$71,462
	Power:					
122	Number of establishments reporting	2	64	57	153	2
123	Total horsepower	15	4,601	1,524	5,575	53
	Owned—					
	Engines—					
124	Steam, number	.....	53	44	47	1
125	Horsepower	.....	3,685	1,407	2,954	5
126	Gas or gasoline, number	.....	1	6	11	.....
127	Horsepower	.....	5	63	144	.....
128	Water wheels, number	.....	18	.....	8	2
129	Horsepower	.....	691	.....	590	48
130	Electric motors, number	.....	1	1	14	1
131	Horsepower	.....	30	5	277	5
	Other power—					
132	Number	.....	2	.....	.....	.....
133	Horsepower	.....	80	.....	.....	.....
	Rented—					
134	Electric, horsepower	7	60	11	757	.....
135	Other kind, horsepower	8	100	38	853	.....
136	Power furnished to other establishments	.....	126	34	55	.....
	Establishments classified by number of persons employed, not including proprietors and firm members:					
137	Total number	3	67	84	223	3
138	No employees	.....	.....	3	2	.....
139	Under 5	.....	4	16	23	.....
140	5 to 20	1	5	21	54	2
141	21 to 50	1	9	16	46	1
142	51 to 100	1	10	9	50	.....
143	101 to 250	.....	20	12	31	.....
144	251 to 500	.....	10	6	13	.....
145	501 to 1,000	.....	8	1	3	.....
146	Over 1,000	.....	1	.....	1	.....

BY STATES, 1900—Continued.

Ohio.	Pennsylvania.	Rhode Island.	Utah.	Vermont.	Virginia.	Washington.	Wisconsin.	All other states.[1]	
$11,074,008	$8,210,846	$179,986	$156,046	$561,786	$1,159,969	$102,599	$3,170,921	$482,066	79
10,096,256	7,316,863	605,999	265,595	667,398	842,295	164,200	4,006,215	971,264	80
$2,945,113	$1,853,124	$78,010	$57,941	$122,803	$230,611	$41,070	$724,643	$177,613	81
177,262	731,574	214,370	9,300	49,400	5,450	4,500	106,129	86,468	82
$35,829	$144,990	$50,073	$1,783	$11,089	$1,400	$946	$20,999	$14,546	83
566,336	541,598	.....	15,630	3,900	4,815	11,628	186,478	16,630	84
$366,116	$395,003	.....	$8,058	$2,792	$3,065	$7,819	$121,165	$6,335	85
2,583,206	2,902,687	179,068	290,068	1,327,524	1,284,017	192,800	4,552,297	1,178,205	86
$342,050	$388,565	$21,395	$35,305	$148,038	$130,560	$26,061	$636,800	$131,604	87
22,694,287	15,353,878	.....	17,666	151,210	1,821,821	10,000	2,157,154	150,400	88
$3,873,520	$2,473,393	.....	$3,400	$17,033	$229,058	$2,200	$400,196	$21,474	89
4,777,895	3,302,975	6,000	54,118	621,139	951,497	30,000	1,827,661	59,445	90
$738,577	$519,281	$471	$8,219	$67,348	$75,050	$5,400	$292,268	$8,575	91
$784,762	$348,247	$1,820	$6,651	$23,964	$28,648	$886	$97,539	$10,958	92
$461,927	$813,857	$1,331	$1,200	$57,754	$89,929	.....	$314,391	$22,134	93
$717,723	$564,344	$17,017	$12,951	$39,869	$67,008	$9,367	$250,684	$44,279	94
$27,044	$36,454	$1,005	$2,624	$1,481	$3,877	$15	$15,717	$1,240	95
$21,471	$15,803	$105	$650	$1,750	.....	$780	$4,489	$275	96
$48,822	$56,980	$250	$1,162	$2,195	$12,693	$55	$11,558	$2,056	97
$599,192	$535,715	$6,112	$6,210	$55,148	$272,962	$5,000	$243,302	$25,596	98
$110,862	$65,090	$2,397	$9,892	$10,522	$15,108	$3,000	$37,170	$15,881	99
$17,920,854	$13,235,933	$241,278	$225,986	$792,707	$1,452,480	$166,423	$4,791,684	$670,323	100
527,241	1,632,918	242,347	63,044	55,220	40,928	98,509	1,428,720	581,936	101
$1,044,926	$2,655,753	$212,264	$114,920	$65,518	$77,742	$155,550	$2,056,814	$595,484	102
974,257	449,297	23,568	45,400	70,476	2,930	9,000	330,007	14,006	103
$1,181,465	$509,136	$20,937	$62,657	$68,450	$3,662	$10,130	$356,206	$14,259	104
8,204,972	3,506,682	6,700	9,642	532,474	1,450,989	.....	1,226,134	83,600	105
$12,096,360	$5,709,409	$5,155	$14,263	$896,889	$1,149,882	.....	$1,764,648	$60,480	106
3,801,508	5,389,475	.....	28,744	299,750	297,214	.....	245,821	.....	107
$3,272,732	$3,765,888	.....	$30,196	$176,685	$134,969	.....	$248,114	.....	108
26,300	13,720	.....	.....	.....	.....	780	17,732	.....	109
$34,490	$12,103	.....	.....	.....	.....	$743	$14,455	.....	110
239,691	261,946	7,450	.....	22,500	19,400	.....	184,865	.....	111
$252,245	$226,214	$2,677	.....	$22,500	$10,620	.....	$205,418	.....	112
65,710	1,224,023	700	1,500	7,500	84,988	.....	98,948	.....	113
$34,657	$300,750	$245	$8,950	$7,500	$64,168	.....	$115,465	.....	114
$3,954	$8,294	.....	.....	.....	$11,447	.....	$45,542	$100	115
$25	$48,386	.....	.....	$55,265	.....	.....	$522	.....	116
70,697	64,145	1,195	800	6,460	8,244	980	17,420	7,650	117
1,582,638	1,175,546	33,981	44,891	93,769	153,089	43,600	493,009	90,680	118
68	125	2	3	4	4	2	38	4	119
$17,221,399	$12,408,059	$237,201	$225,986	$666,357	$1,429,460	$106,423	$4,629,673	$266,026	120
$14,520,783	$11,682,181	$231,291	$198,856	$501,050	$1,514,035	$74,151	$4,543,597	$242,946	121
74	116	4	3	6	4	2	31	6	122
3,632	2,790	45	64	268	287	25	958	251	123
24	80	3	1	3	3	.....	16	3	124
1,865	2,311	43	44	140	235	.....	637	185	125
16	6	.....	.....	.....	2	.....	5	1	126
347	57	.....	.....	.....	32	.....	56	10	127
.....	.....	.....	.....	2	.....	.....	1	.....	128
.....	.....	.....	.....	80	.....	.....	11	.....	129
44	4	.....	.....	4	1	.....	.....	.....	130
335	40	.....	.....	38	20	.....	.....	.....	131
.....	.....	.....	.....	.....	.....	.....	.....	.....	132
.....	.....	.....	.....	.....	.....	.....	.....	.....	133
240	89	.....	20	.....	.....	25	127	56	134
845	293	2	.....	10	.....	.....	127	.....	135
152	56	5	.....	.....	.....	.....	3	.....	136
81	146	5	3	6	5	3	40	8	137
1	1	.....	.....	.....	.....	.....	1	1	138
8	13	4	.....	.....	.....	.....	5	2	139
18	42	1	.....	.....	.....	1	6	2	140
9	28	.....	2	2	2	1	7	2	141
18	30	.....	1	3	2	1	12	.....	142
22	25	.....	.....	1	.....	.....	6	1	143
8	4	.....	.....	.....	.....	.....	3	.....	144
4	8	.....	.....	.....	.....	.....	.....	.....	145
3	.....	.....	.....	.....	1	.....	.....	.....	146

[1] Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2.

RUBBER BOOTS AND SHOES.

RUBBER BOOTS AND SHOES.

By HARRY E. BARBOUR.

Although the rubber boot and shoe industry was successfully established in this country prior to 1850, it was not reported as a separate industry until the census of 1880. At previous censuses it was reported together with rubber coats, druggists' supplies, and various other rubber sundries, under the general captions of india-rubber and elastic goods, and india-rubber goods. The growth and development of the industry during the past two decades has been constant, and in many respects remarkable, as is shown by the statistics presented in the following tables. Table 1 is a comparative summary of the returns for this industry from 1880 to 1900, inclusive.

TABLE 1.—COMPARATIVE SUMMARY, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900.	1890.	1880.	1890 to 1900.	1880 to 1890.
Number of establishments	22	11	9	100.0	22.2
Capital	$33,667,533	$17,790,970	$2,425,000	89.2	633.6
Salaried officials, clerks, etc., number	483	[1] 130	(2)	271.5	.....
Salaries	$597,239	[1] $153,802	(2)	288.3	.....
Wage-earners, average number	14,391	9,134	4,662	57.6	95.9
Total wages	$6,426,579	$3,813,073	$1,469,038	68.5	159.6
Men, 16 years and over.	8,248	5,126	2,514	60.9	103.9
Wages	$4,338,480	$2,524,209	(2)	71.9	.....
Women, 16 years and over	5,942	3,924	1,984	51.4	97.8
Wages	$2,052,462	$1,273,580	(2)	61.2	.....
Children, under 16 years	201	84	164	139.3	[3] 48.8
Wages	$35,637	$15,284	(2)	133.2	.....
Miscellaneous expenses	$2,089,154	$943,918	(4)	121.3	.....
Cost of materials used	$22,682,543	$11,650,787	$6,023,053	94.7	93.4
Value of products, including custom work and repairing	$41,089,819	$18,632,060	$9,705,724	120.5	92.0

[1] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 11.)
[2] Not reported separately.
[3] Decrease.
[4] Not reported.

Table 1 shows that from 1880 to 1900 the number of establishments increased from 9 to 22; the capital, from $2,425,000 to $33,667,533; wage-earners, from 4,662 to 14,391; wages, from $1,469,038 to $6,426,579; cost of materials, from $6,023,053 to $22,682,543; and the value of products, from $9,705,724 to $41,089,819. In 1880 there were 9 establishments engaged in this industry, having a capital of $2,425,000; in 1890, 11 establishments, having a capital of $17,790,970; and in 1900, 22 establishments, having a capital of $33,667,533.

The apparently abnormal increase in capital from $2,425,000 in 1880 to $17,790,970 in 1890, or 633.6 per cent, is probably due in part to the fact that a return of live capital was first called for at the census of 1890. As will be seen from Table 3, this item amounted in 1890 to 80.2 per cent of the total capital. If the total capital of 1880 be compared with that of 1890, less this new item of live capital, the per cent of increase will be found to be 45—a figure which may perhaps be regarded as fairly representative of the growth of capital in the industry during that decade. Since the value of products rose in the same period from $9,705,724 to $18,632,060, or 92 per cent, while the number of establishments increased only from 9 to 11, or 22.2 per cent, it is clear that the progress of the decade was chiefly in the development and increased business of established companies rather than in the inception of new enterprises.

Bearing in mind this difference in returns of capital for 1880 and 1890, we find that in every item (except wage-earners and wages, which are not comparable) the industry has made during the last ten years a greater progress than in the previous decade. In value of products the gain was 120.5 per cent against 92 per cent from 1880 to 1890; in number of establishments, 100 per cent against 22.2; and in capital, 89.2 per cent. The average capital per establishment was slightly smaller in 1900 than it was in 1890. In 1880 there were 4,662 wage-earners, an average of 518 for each establishment; in 1890 the number of wage-earners had increased to 9,134, or 95.9 per cent, an average of 830; and in 1900 there were 14,391 wage-earners, an increase of 57.6 per cent over 1890, and an average of 654 for each establishment. In 1880 the amount of wages paid was $1,469,038; in 1890 it was $3,813,073, showing an increase of 159.6 per cent; and in 1900 it was $6,426,579, showing an increase of 68.5 per cent over 1890. No separate report was made of miscellaneous expenses in 1880; in 1890 this item amounted to $943,918; in 1900 it amounted to $2,089,154, showing an increase of 121.3 per cent. In 1880 the cost of materials was $6,023,053; in 1890 it was $11,650,787,

showing an increase of $5,627,734, or 93.4 per cent; and in 1900 the cost of materials used was reported at $22,682,543, an increase of $11,031,756, or 94.7 per cent over 1900. In 1880 the industry showed products valued at $9,705,724; in 1890 the value of the products was $18,632,060, an increase of $8,926,336, or 92 per cent. In 1900 the value of the products was $41,089,819, an increase over 1890 of $22,457,759, or 120.5 per cent.

The following graphic chart shows the comparative growth of capital, cost of materials, and value of products from 1880 to 1900, the unit of growth being $1,000,000.

Table 2 presents, by states, the number of establishments actively engaged in the manufacture of rubber boots and shoes in 1890 and in 1900.

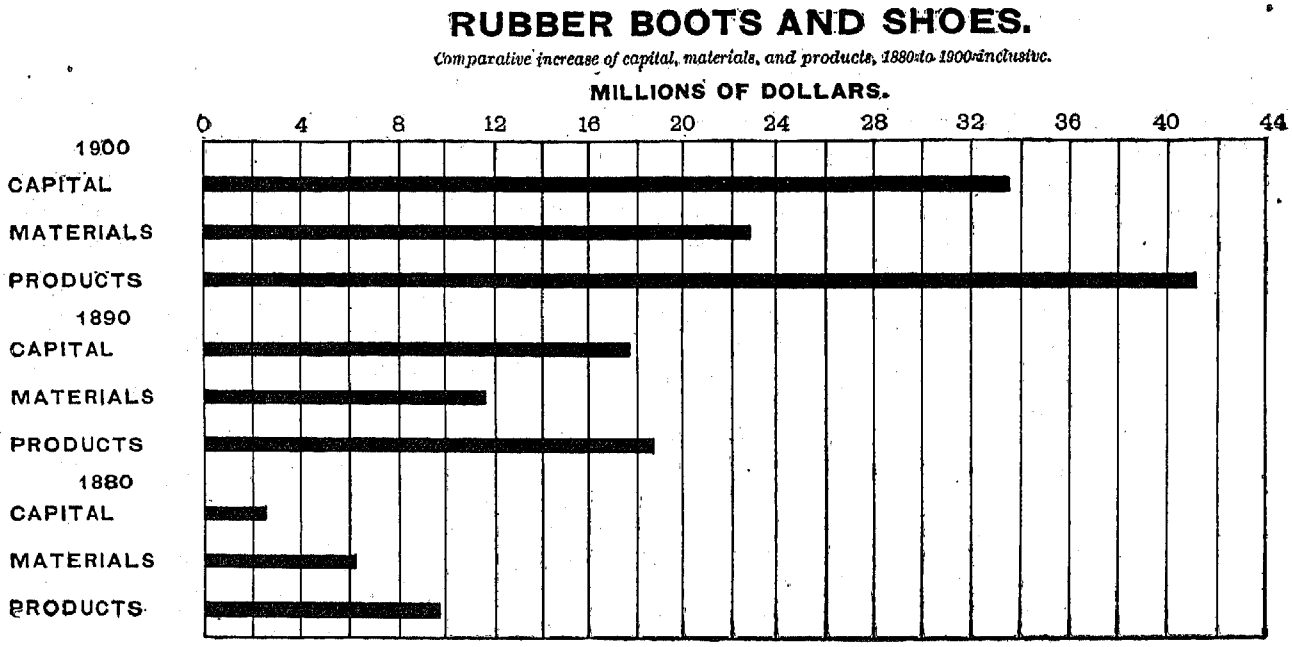

TABLE 2.—COMPARATIVE SUMMARY: NUMBER OF ACTIVE ESTABLISHMENTS, 1890 AND 1900, BY STATES.

STATES.	1900	1890
United States	22	11
Connecticut	5	2
Massachusetts	6	5
Missouri	1	
New Jersey	2	2
Pennsylvania	2	1
Rhode Island	6	1

It appears from Table 2 that the number of establishments engaged in this industry increased from 11 to 22, or 100 per cent, during the decade. The greatest increase was shown in Rhode Island which reported 1 establishment in 1890 and 6 in 1900. Connecticut shows an increase of 3, while Massachusetts, Missouri, and Pennsylvania show an increase of 1 each. One plant was established in Massachusetts and 1 in Rhode Island during the census year.

Table 3 is a comparative summary of capital as returned at the censuses of 1890 and 1900, with the per cent each item is of the total, and the per cent of increase for the decade.

TABLE 3.—COMPARATIVE SUMMARY, CAPITAL: 1890 AND 1900.

	1900		1890		Per cent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total	$33,667,533	100.0	$17,790,970	100.0	89.2
Land	939,089	2.8	463,615	2.6	102.6
Buildings	3,554,457	10.5	1,664,992	9.4	113.5
Machinery, tools, and implements	3,700,050	11.0	1,386,595	7.8	166.8
Cash and sundries	25,473,937	75.7	14,275,768	80.2	78.4

The principal item reported under the head of capital, both in 1890 and 1900, is that of cash and sundries, including cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries. This item in 1890 amounted to $14,275,768, or 80.2 per cent of the total; and in 1900 it was $25,473,937, an increase of 78.4 per cent, and represented 75.7 per cent of the total capital. In 1890 the value of the land was reported at $463,615, or 2.6 per cent of the total capital; in 1900 it was $939,089, or 2.8 per cent of the total, showing an increase of 102.6 per cent. From 1890 to

1900, the value of the buildings increased from $1,664,992 to $3,554,457, or 113.5 per cent. This item in 1890 represented 9.4 per cent of the total capital, and 10.5 per cent in 1900. The amounts reported for land and buildings represent only such as are owned by the establishments engaged in this industry, and do not include leased property. The greatest proportional increase in any form of capital was in the item of machinery, tools, and implements, indicating the continual extension in the application of machinery to this industry. In 1890 the value of machinery, tools, and implements, was $1,386,595, or 7.8 per cent of the total capital; in 1900 it was $3,700,050, or 11 per cent of the total, showing an increase of 166.8 per cent. Notwithstanding the marked increase in capital during the decade, the amount reported for each item in Table 3 represents very nearly the same per cent of the total, in 1890 and in 1900, indicating a steady and uniform growth for the period. In addition to the capital for active establishments, shown in Table 3, there was a capital of $105,000 reported for 1 idle establishment, located in New Jersey.

Table 4 shows in detail the statistics of miscellaneous expenses for 1900.

TABLE 4.—MISCELLANEOUS EXPENSES: 1900.

	1900	
	Amount.	Per cent of total.
Total	$2,089,154	100.0
Rent of works	12,800	0.6
Taxes, not including internal revenue	184,892	8.9
Rent of offices, insurance, interest, repairs, advertising, and other sundries	1,891,462	90.5

Table 4 shows that the amount paid for miscellaneous expenses in 1900 was $2,089,154. The total expenditures for rent of works, $12,800, which represents six-tenths of 1 per cent of all miscellaneous expenses, was divided between two establishments. Taxes, not including internal revenue, amounted to $184,892, or 8.9 per cent of the total. The principal item of miscellaneous expenses is that of rent of offices, insurance, interest, internal-revenue tax and stamps, repairs of buildings and machinery, advertising, and all other sundries not reported under the head of materials. This item represents $1,891,462, or 90.5 per cent of the total. Interest, included under this head, comprises only such sums as were paid for money or credit during the year. No allowance is made for depreciation in value of buildings or machinery. None of the establishments engaged in this industry report having paid anything for contract work during the year.

Table 5 shows the cost of materials used in the manufacture of rubber boots and shoes, the cost of each item, and its proportion of the whole amount for 1900.

TABLE 5.—COST OF MATERIALS: 1900.

	1900	
	Amount.	Per cent of total.
Total	$22,682,543	100.0
Principal materials	22,223,946	98.0
Purchased in raw state	14,582,768	64.3
Purchased in partially manufactured form	7,641,178	33.7
Fuel	242,619	1.1
Mill supplies	123,869	0.5
Freight	92,109	0.4

Table 5 shows that the total cost of materials for 1900 was $22,682,543. The largest item is that reported for principal materials, or those which actually enter into the product. These are subdivided into materials purchased in a raw state and those purchased in a partially manufactured form. Materials purchased in the raw state are those upon which no manufacturing force has been expended, and consist chiefly of crude rubber. The cost of this class of materials was $14,582,768, or 64.3 per cent of the total. Materials purchased in a partially manufactured form cost $7,641,178, or 33.7 per cent of the total. This item includes reclaimed rubber, felt goods, chemicals, sheeting, and other necessary materials. It is impossible to estimate the exact quantity or value of reclaimed rubber used in 1900; many establishments included this item with the cost of all other materials, yet the fact that 5 establishments reported having used 2,971,806 pounds of reclaimed rubber, valued at $337,371, shows it to be an important factor in this industry. Some establishments were unable to separate the amount paid for freight from the cost of materials, and reported the two together. For that reason the $92,109 shown in Table 5 does not represent the actual cost of freight, and should be considered only in connection with the cost of materials. The amount paid for fuel, $242,619, comprises that used for both motive power and heating purposes. Each establishment engaged in this industry produced its own power and heat. Mill supplies, including oil, waste, belting, tools, etc.—materials which do not enter into the product, but are necessary in the process of manufacture—cost $123,869. The three items of fuel, mill supplies, and freight, together form but a small per cent of the total.

Table 6 is an extract from the report on commerce and navigation issued by the United States Treasury Department, showing the entire amount of crude rubber imported into this country during the fiscal year ending June 30, 1900, and the countries from which it was exported.

TABLE 6.—QUANTITY AND VALUE OF TOTAL IMPORTS OF CRUDE RUBBER FOR THE FISCAL YEAR ENDING JUNE 30, 1900.

COUNTRIES FROM WHICH IMPORTED.	Pounds.	Value.
Total	49,377,138	$31,376,867
Europe	16,998,907	11,231,915
Belgium	2,844,404	2,243,964
France	1,198,209	745,592
Germany	1,750,498	892,246
Netherlands	106,621	68,122
Portugal	2,488,114	1,719,311
United Kingdom	8,611,061	5,562,680
North America	1,922,179	1,028,504
British Honduras	51,295	23,852
Dominion of Canada	586	440
Newfoundland and Labrador	9,171	5,997
Central American states:		
Costa Rica	134,789	78,870
Guatemala	204,546	74,596
Honduras	176,731	83,184
Nicaragua	827,087	523,131
Salvador	54,971	18,909
Mexico	450,712	214,886
West Indies:		
British	11,964	4,443
Cuba	327	196
South America	29,811,978	18,831,082
Brazil	28,026,714	17,876,121
Chile	15,136	10,394
Colombia	815,091	439,632
Ecuador	826,411	421,283
Guiana, Dutch	215	118
Peru	8,211	5,345
Uruguay	785	480
Venezuela	119,415	77,709
Asia	644,074	285,366
Chinese Empire	2,168	828
East Indies, British	640,483	284,155
Hongkong	1,423	383

During the year ending June 30, 1900, the total amount of crude rubber imported into the United States was 49,377,138 pounds, valued at $31,376,867. Of this amount 29,811,978 pounds, valued at $18,831,082, were shipped from South America; 16,998,907 pounds, valued at $11,231,915, from Europe; 1,922,179 pounds, valued at $1,028,504, from North America; and 644,074 pounds, valued at $285,366, from Asia. Of the total amount imported, 28,026,714 pounds, valued at $17,876,121, or more than half, was received from Brazil, the chief rubber-producing country, shipments being made directly from Brazilian to American seaports. In the quantity of rubber furnished, Brazil is followed by the United Kingdom, Belgium, Portugal, Germany, and France, in the order named. From these six countries were received about nine-tenths of the importation of crude rubber for the year.

Table 6 is not intended to show the source of the crude rubber used in this country, but rather the quantity received. Large amounts were shipped from non-producing countries, while none whatever came from Africa to the United States direct. Table 7 shows that 4,917,281 pounds of African rubber, costing $3,624,442, were used in the manufacture of rubber boots and shoes. This rubber reached the United States by way of other countries. The entire importation of crude rubber for the year, shown in Table 6, should be considered in connection with Table 7, which shows the quantity, value, and source of that used in the manufacture of rubber boots and shoes.

TABLE 7.—QUANTITY AND VALUE OF THE IMPORTS OF CRUDE RUBBER USED IN THE MANUFACTURE OF RUBBER BOOTS AND SHOES: 1900.

COUNTRIES FROM WHICH IMPORTED.	Pounds.	Value.
Total	17,684,657	$14,582,768
Brazil	10,891,367	9,638,992
Africa	4,917,281	3,624,442
Central America	1,858,473	1,304,754
Asia	17,536	14,580

Table 7 shows that in 1900 there were consumed in this industry 17,684,657 pounds of crude rubber, valued at $14,582,768. A comparison of these figures with those of Table 6 shows that 35.8 per cent of the total quantity and 46.5 per cent of the total value of crude rubber imported during the year was used in the manufacture of rubber boots and shoes. Of the amount so used, 10,891,367 pounds, valued at $9,638,992, came from Brazil; 4,917,281 pounds, valued at $3,624,442, from Africa; 1,858,473 pounds, valued at $1,304,754, from Central America; and 17,536 pounds, valued at $14,580, from Asiatic countries.

Table 8 is a detailed statement, by states, of the number of pairs and the value of the different varieties of rubber boots and shoes manufactured during the census year.

The aggregate value of the products of this industry during the census year was $41,089,819. There were produced 49,979,229 pairs of rubber boots and shoes of all kinds, or more than one pair for every two persons in the United States, the value of the output, including men's, women's, and children's, being $38,761,320. For those states which reported 3 or more establishments, the product is shown separately, while, to avoid disclosing the operations of individual establishments, the product of those states reporting less than 3 is shown collectively under the head of "all others." Massachusetts, with 6 establishments, reported products valued at $16,490,015, or 40.1 per cent of the aggregate; Connecticut, with 5 establishments, reported products valued at $11,999,038, or 29.2 per cent; Rhode Island, with 6 establishments, reported products valued at $8,034,417, or 19.6 per cent; and the 5 establishments located in Missouri, New Jersey, and Pennsylvania manufactured $4,566,349 worth of products, or 11.1 per cent of the aggregate for the industry. By means of the supplemental reports furnished by the different establishments, it is possible to itemize the products, showing the quantity and value of each of the principal kinds of goods manufactured. In Table 8 the product is divided into men's, women's, and children's wear, and these groups are again subdivided into rubber boots, rubber shoes, rubber tennis shoes, arctic overs, lumbermen's overs, felt boots, and other varieties, the last-named subdivision including boots and shoes which can not be classified under any of the preceding headings. The item, "all other products," comprises the products for which

TABLE 8.—NUMBER OF PAIRS AND VALUE OF DIFFERENT KINDS OF RUBBER BOOTS AND SHOES: 1900.

	United States.	Massachusetts.	Connecticut.	Rhode Island.	All other states.[1]
Aggregate value	$41,089,819	$16,490,015	$11,999,038	$8,084,417	$4,566,349
Boots and shoes, rubber:					
Total number of pairs	49,979,229	19,750,961	15,375,035	10,090,357	4,762,876
Total value	$38,761,320	$15,773,553	$11,518,072	$7,051,812	$4,422,883
Men's—					
Total number of pairs	24,686,643	9,287,815	7,689,297	5,248,239	2,461,292
Total value	$27,160,177	$11,195,770	$7,921,802	$4,693,846	$3,448,759
Rubber boots—					
Number of pairs	3,512,421	2,082,541	770,569	198,619	460,692
Value	$10,572,214	$6,465,974	$2,400,687	$460,432	$1,245,171
Rubber shoes—					
Number of pairs	10,651,684	3,751,082	3,983,525	2,187,672	779,405
Value	$5,518,515	$1,674,087	$2,168,097	$1,185,504	$495,827
Rubber tennis shoes—					
Number of pairs	1,424,448	623,426	30,000	748,728	22,294
Value	$634,041	$336,277	$20,000	$268,888	$8,876
Arctic overs—					
Number of pairs	4,672,862	1,690,052	969,005	1,556,321	457,484
Value	$4,815,075	$1,602,013	$922,668	$1,795,733	$494,661
Lumbermen's overs—					
Number of pairs	4,229,899	996,962	1,936,198	558,766	737,973
Value	$5,488,166	$1,031,158	$2,415,400	$842,550	$1,199,058
Felt boots—					
Number of pairs	147,196	143,752	.....	.....	3,444
Value	$91,427	$86,261	.....	.....	$5,166
Other varieties—					
Number of pairs	48,133	.....	.....	48,133	.....
Value	$40,789	.....	.....	$40,789	.....
Women's—					
Total number of pairs	18,847,355	8,105,873	6,247,549	2,964,976	1,528,957
Total value	$8,165,695	$3,042,142	$2,969,100	$1,504,691	$649,762
Rubber boots—					
Number of pairs	303,622	159,174	86,435	29,246	28,717
Value	$464,264	$219,680	$153,055	$50,072	$41,457
Rubber shoes—					
Number of pairs	16,113,746	7,102,051	5,579,019	2,086,385	1,346,291
Value	$5,925,474	$2,231,765	$2,360,254	$842,211	$491,244
Rubber tennis shoes—					
Number of pairs	346,744	220,807	21,456	99,661	4,820
Value	$185,199	$129,357	$15,044	$38,987	$1,811
Arctic overs—					
Number of pairs	2,003,286	623,841	551,330	678,986	149,129
Value	$1,535,962	$461,340	$431,488	$527,884	$115,250
Lumbermen's overs—					
Number of pairs	9,259	.....	9,259	.....	.....
Value	$9,259	.....	$9,259	.....	.....
Other varieties—					
Number of pairs	70,698	.....	.....	70,698	.....
Value	$45,537	.....	.....	$45,537	.....
Children's—					
Total number of pairs	6,445,231	2,357,273	1,438,189	1,677,142	772,627
Total value	$3,435,448	$1,535,641	$622,170	$958,275	$324,362
Rubber boots—					
Number of pairs	623,009	444,889	84,545	33,641	59,934
Value	$1,123,060	$906,406	$99,327	$45,795	$71,532
Rubber shoes—					
Number of pairs	4,135,468	1,433,434	1,186,167	1,010,151	505,711
Value	$1,299,182	$342,197	$425,176	$381,025	$150,784
Rubber tennis shoes—					
Number of pairs	558,089	206,726	20,000	298,224	33,139
Value	$249,484	$123,541	$12,000	$101,993	$11,950
Arctic overs—					
Number of pairs	971,613	224,296	138,850	492,297	116,170
Value	$634,710	$135,437	$82,827	$371,974	$44,472
Lumbermen's overs—					
Number of pairs	145,418	47,928	8,627	31,602	57,261
Value	$122,176	$28,060	$2,840	$46,260	$45,016
Felt boots—					
Number of pairs	412	.....	.....	.....	412
Value	$608	.....	.....	.....	$608
Other varieties—					
Number of pairs	11,227	.....	.....	11,227	.....
Value	$6,228	.....	.....	$6,228	.....
All other products, including custom work and repairing	$2,328,499	$716,462	$485,966	$982,605	$143,466

[1] Includes establishments located in Missouri, New Jersey, and Pennsylvania.

separate quantities and values have not been given, by-products, and custom work and repairing. The value of men's wear was reported at $27,160,177, or 66.1 per cent of the aggregate product of the industry; women's at $8,165,695, or 19.9 per cent; children's at $3,435,448, or 8.3 per cent; and all other varieties, including custom work and repairing, at $2,328,499, or 5.7 per cent of the aggregate product.

As wool and felt boots enter in considerable quantities into some of the finished products of the rubber boot and shoe industry, there is given in Table 9 a summary showing the statistics for this industry as carried on in 1900 by establishments separate and distinct from those engaged in the manufacture of rubber boots and shoes.

TABLE 9.—SUMMARY OF THE MANUFACTURE OF WOOL AND FELT BOOTS: 1900.

Number of establishments	5
Capital	$2,361,871
Salaried officials, clerks, etc., number	82
Salaries	$134,149
Wage-earners, average number	1,400
Total wages	$649,666
Men, 16 years and over	1,087
Wages	$561,123
Women, 16 years and over	309
Wages	$88,062
Children, under 16 years	4
Wages	$481
Miscellaneous expenses	$122,550
Cost of materials used	$1,548,408
Value of products, including custom work and repairing	$2,742,745

Table 9 shows that there were 5 establishments engaged in the wool and felt boot industry in 1900, with a total capital of $2,361,871. The industry gave employment to 1,400 wage-earners, with total wages amounting to $649,666, and the value of the products was $2,742,745.

Table 10 is a comparative statement of the exports of rubber boots and shoes for 1890 and 1900, giving the number of pairs, their value, and the countries to which they were exported, as shown in the reports of the Bureau of Statistics of the United States Treasury Department.

TABLE 10.—EXPORTS OF RUBBER BOOTS AND SHOES: 1890 AND 1900.

COUNTRIES TO WHICH EXPORTED.	1900		1890	
	Pairs.	Value.	Pairs.	Value.
Aggregate	767,104	$420,746	171,473	$149,055
Europe	647,189	301,040	66,516	43,325
Austria-Hungary	4,822	2,099	75	38
Azores and Madeira Island	48	120	129	539
Belgium	9,753	4,880	5,139	2,344
Denmark	6,484	4,864	4,799	1,930
France	153,865	54,680	1,161	692
Germany	141,266	55,946	2,544	1,419
Italy	235	170	15	11
Netherlands	318	145	3,111	1,341
Portugal			31	29
Spain	13,519	6,442		
Sweden and Norway	884	414	100	50
Switzerland	3,810	1,132		
Turkey	7,006	3,844		
United Kingdom	305,679	166,804	49,412	34,932
North America	49,798	53,326	85,777	79,879
British Honduras	24	9		
British North America:				
Dominion of Canada—				
Nova Scotia, New Brunswick	18,880	19,996	14,841	10,776
Quebec, Ontario, Manitoba	8,661	4,562	37,921	32,489
British Columbia	5,764	15,146	20,494	27,216
Newfoundland and Labrador	4,985	4,087	4,024	3,393
Central American states:				
Costa Rica	36	17		
Guatemala	146	80	684	561
Honduras	15	15	24	11
Nicaragua	288	193	108	203
Mexico	1,894	1,043	3,931	1,779
Miquelon, Langley, etc	2,953	4,021	1,700	1,691
West Indies:				
British	90	111	422	504
Cuba	5,749	3,793	58	98
Danish	15	11	172	132
Dutch			132	101
French	4	12		
Haiti	38	24	625	619
Porto Rico	232	198	193	125
Santo Domingo	24	8	448	181
South America	9,492	6,852	5,801	2,792
Argentina	1,534	1,501	334	287
Brazil	3,016	2,874	326	467
Chile	264	672		
Colombia	3,932	1,442	3,142	1,274
Ecuador	168	79	144	60
Peru	290	177	224	141
Uruguay	288	107		
Venezuela			1,631	613
Asia	22,654	17,662	6,571	8,509
Chinese Empire	428	741	504	725
East Indies, British	158	85		
Hongkong	708	1,145	75	172
Japan	21,285	15,630	5,992	7,612
Turkey in Asia	80	61		
Oceania	86,689	40,635	6,806	14,546
British Australasia	34,513	35,769	5,416	11,225
French Oceania	14	80	83	214
Hawaii	2,070	4,631	1,307	3,107
Philippine Islands	92	205		
Africa	1,282	1,231	2	4
British Africa	1,258	1,159		
French Africa	24	72		
Liberia			2	4

Table 10 shows the development, during the past decade, of the export trade in rubber boots and shoes. In 1890 there were exported 171,473 pairs, valued at $149,055; in 1900 the total exports had increased to 767,104 pairs, valued at $420,746. Nearly half of the exports in 1890 were sent to Canada, while 49,412 pairs, valued at $34,932, went to the United Kingdom. The exports to other countries ranged in number and value from 5,416 pairs, valued at $11,225, exported to British Australasia, to the 2 pairs, valued at $4, which were sent to Liberia. The greatest increases have been in our exports to the United Kingdom, France, Germany, and other leading manufacturing countries. In 1900 our exports to the United Kingdom amounted to 305,679 pairs, valued at $166,804. France, which received but 1,161 pairs, invoiced at $692, in 1890, purchased 153,865 pairs, valued at $54,680, in 1900. During the ten years the exports to Germany increased from 2,544 pairs, valued at $1,419, to 141,266 pairs, valued at $55,946. Notable increases were made in the exports to British Australasia, Japan, Brazil, Cuba, Denmark, Belgium, and Austria-Hungary; while Spain, Switzerland, Turkey, Chile, Uruguay, the Philippine Islands, British Africa, and several minor countries, to which no exports were sent in 1890, received in 1900 a total of 26,558 pairs, valued at $13,817. Between 1890 and 1900 there were decreases in the exports to the Netherlands, Dominion of Canada, Mexico, Venezuela, and several smaller countries. The most notable decrease is found in the exports to the Dominion of Canada, which in 1900 amounted to 33,305 pairs, valued at $39,704, compared with 73,256 pairs, valued at $70,481, in 1890. While the rubber boot and shoe exports represented but a little more than 1 per cent of the product in 1900, they are increasing in value and have made their way into almost every part of the globe.

HISTORICAL AND DESCRIPTIVE.

The manufacture of boots and shoes is one of the oldest industries in America. There were many shoemakers among the early settlers in this country, and in an old document bearing date of 1629 it is found recorded that Thomas Beard, with "hides, both upper and bottom, was shipped out" on the *Mayflower*. But it was not until almost the middle of the last century that the manufacture of boots and shoes from rubber—the product of caoutchouc gum—was carried on with any degree of success in this or any other country. So closely is the early history of the manufacture of rubber boots and shoes associated with that of the rubber industry in general that a brief synopsis of the latter will truly describe the conditions of the former.

Crude rubber is prepared from the milky sap, or latex, of rubber-yielding plants, the habitat of which is limited to the regions between the thirtieth degree north and the thirtieth degree south latitude. Some botanists claim that all plants having a milky juice or sap contain rubber; and there is authority for the statement that the juice of the milkweed, so common in the

United States and Canada, contains 4 per cent of rubber. But even if this is true, rubber is not found in quantities sufficient to make the gathering of it profitable, except in tropical and semitropical regions. There are several different families and species of rubber-yielding plants, and the climatic conditions in which they thrive vary from the moist region of the Amazon to the hot, dry, granite rocks of Ceara. While rubber is produced in South America, Central America, Africa, Asia, and many tropical islands, the best quality is that known as Para rubber, which derives its name from the seaport whence it is exported. This is abundantly produced in the moist, warm regions of the Amazon River, where the annual rainfall is about 7 feet and inundations are frequent. Authorities are divided as to the species of rubber-yielding tree which produces the best quality of rubber, some claiming that it is the Hevea guyanensis (also called Siphonia elastica), while others designate Hevia braziliensis (also called Siphonia braziliensis) as the actual rubber tree. The milky sap of the rubber plant is obtained by either tapping or felling the tree, and the juice, when collected, is prepared for export in various ways. The best and most practical way of preparing the rubber for market is that used in the preparation of Para rubber and has much to do with its superior quality. This is known as the process of fumigation. A fire of brushwood or palm nuts is kindled, and over it is placed a clay funnel. The Seringueiro, or rubber gatherer, dips a paddle-shaped stick into his gourd of milky sap, then holds it in the dense smoke issuing from the funnel until the latex acquires sufficient density. This process is repeated, adding layer after layer, until the mass on the end of the paddle reaches the desired thickness, when it is slit up, and after drying in the open air is ready for market. By this process a good workman can cure five or six pounds of rubber in an hour.[1]

The first importations of rubber into the United States did not come as articles of commerce, but were brought here by sailors as a curious product of tropical lands. No particular commercial value was placed upon "gum elastic," as it was called, and it could readily be purchased at 5 cents a pound. In the year 1823 a Boston sea captain, returning from a tropical voyage, brought with him a pair of gilded rubber shoes, which, though heavy and awkward, aroused general interest because of their imperviousness to water. A few years later several hundred pairs of these rubber shoes, without the gilding, were brought into this country and readily sold at prices ranging from $3 to $5 per pair. The low cost of crude rubber and its relatively high value when made into shoes soon suggested to enterprising minds that considerable profit could be realized from the manufacture and sale of rubber goods, and both in the United States and Europe attention was given to the study and development of this product of the Tropics. In 1831 Mr. Chaffee, a manufacturer of leather goods in Roxbury, Mass., discovered that crude rubber dissolved in spirits of turpentine and combined with a quantity of lampblack would produce a varnish which would give to leather or cloth a surface smooth, hard, and impervious to water, and in 1833 the Roxbury India Rubber Company was organized to place this discovery upon the market. This is said to have been the pioneer company in the American rubber trade. The manufacture of rubber goods offered so broad a field for development that others followed the lead of the Roxbury company. Several millions of dollars were invested in this new industry, and a large and profitable business seemed assured. But the rubber problem had not been solved. Hardly had the product of these factories been placed upon the market when it was discovered that for practical purposes it was almost useless. In warm weather the rubber melted and became sticky, and when exposed to cold it became brittle and cracked. The demand for rubber goods ceased, and large quantities which were on the market were returned to the manufacturers. Efforts to remedy this fault having proved unsuccessful, the factories were closed, and in 1835 the rubber industry was in a state of absolute collapse.[2]

Experiments were being carried on, however, simultaneously in the United States and in Europe, which were leading toward the correct solution of the rubber problem. In 1832 Luedersdorf, a German chemist, discovered that sulphur would deprive rubber dissolved in oil of turpentine of its stickiness. About the same time Nathaniel Hayward noticed that flowers of sulphur scattered upon leaves of rubber weakened their adhesive power. No further development of this process seems to have been made by either Luedersdorf or Hayward, and it remained for Charles Goodyear to discover the method by which rubber could be put to practical use. To those who are interested in the manufacture of rubber the story of Goodyear's discovery of the process of vulcanization is familiar. While surrounded by a small group of friends and neighbors to whom he was explaining his theories, based on the discovery of Hayward, he accidentally overturned a small quantity of rubber and sulphur upon a hot stove. It was by this accident that the remarkable discovery was made that heat was the one thing needed to make rubber insensible to both heat and cold. With the key to the solution of the problem thus exposed the process of vulcanization was rapidly developed. Goodyear's original method consisted in combining rubber with melted sulphur and heating the compound to about 300° F. A product similar to Goodyear's was shortly afterwards prepared by Hancock, by immersing rubber in melted sulphur heated to about 302° F., and allowing it to remain until thoroughly permeated. Alexander Parkes, of Birmingham,

[1] India Rubber, Gutta-percha, and Balata; William T. Brannt, pages 7–37.

[2] One Hundred Years of American Commerce; American Rubber Manufactures, by Charles L. Johnson, Vol. II, pages 498–500.

discovered the process of "cold vulcanization," which is accomplished by means of chloride of sulphur; and Gerard has demonstrated that small, thin articles can be vulcanized by the use of alkaline sulphur. But of all methods of treating rubber the most important and the one in most general use is that invented by Goodyear, which consists in mechanically mixing rubber and sulphur at a moderate temperature and subsequently curing the mixture by the use of superheated steam at a temperature ranging from 248° to 302° F.[1] Color, softness, and other properties are given to rubber by the use of litharge, white lead, chalk, lampblack, and other materials.

Vulcanized rubber possesses the following properties: It retains its elasticity at a temperature as high as 248° F. and as low as —22° F.;[2] it can not be dissolved by ordinary solvents; it acquires extraordinary powers of resisting compression, with a great increase of strength and elasticity. Thus, by the process of vulcanization, the almost useless "gum elastic" has been transformed into a useful article of commerce, and the field for further development seems almost unlimited.

When crude rubber is imported into this country it must first of all be purified. The impurities either originate in the rubber itself or consist of pieces of bark, dirt, stones, or other substances which become mixed with the mass in course of preparation. In cleansing the rubber, it is first softened by immersion in water heated by steam, where it is allowed to remain from three to twenty-four hours. The lump is then cut into slices, either by machine or by hand, and the larger impurities removed. The next step is that of rolling and washing, accomplished by passing the rubber between two massive iron rolls—usually corrugated—directly over the point of contact of which is an iron water pipe. The rubber is fed into this machine, ground and crushed by the rolls, while the water from the pipe directly above permeates the mass and washes away the small particles of bark, fiber, and other foreign substances. After the rubber has been repeatedly passed through these rolls it is placed in drying chambers, where it remains until entirely free from moisture, when it is stored away, in rooms protected from light and dampness, until needed for further working.[3]

In the manufacture of boots and shoes the cleansed rubber is first ground and masticated. It then undergoes the compounding process, by which it is mixed with the various ingredients, chiefly sulphur and litharge. After that it is rolled and pressed, the whole mass being kneaded into one homogeneous substance. The boots and shoes of the present day are not made of one solid piece of rubber, as were those first brought into this country. The ordinary rubber shoe consists of 7 or 8 different parts, and 23 parts are necessary to make the rubber boot. The rubber which is to form the uppers is coated with a tricotic tissue, by passing through a calender; that which is to make the soles is passed through another calender, from which it comes with the sole pattern marked out; and each of the other parts is prepared by being passed through the proper calender. From the sheets so formed the pieces are cut out, usually by hand, and cemented together over a smooth last. They are then varnished with asphalt lacquer and revulcanized for seven or eight hours at a temperature of 260° F. The product is then ready for the market. Another important feature of the industry is the process by which waste rubber is reclaimed and again used in manufacturing. This waste, which consists of old rubber boots, shoes, belting, and innumerable other rubber articles, is first run through masticating machines which reduce it to a powder-like mass. It is then passed over magnetic plates, by which all metallic substances are withdrawn, and by another machine the dirt is sifted out. The waste is next boiled in a vat with an acid solution, which destroys the fibrous matter; and, after being washed in large tubs, is thoroughly dried and returned to the mills for refining.[4]

The manufacture of rubber boots and shoes, as it exists in the United States, dates its inception from the granting of the Goodyear patent, in 1844; and from the very beginning to the present time the industry has shown a strong, steady development. This is noticeable not only in the quantity of goods produced but also in the style and quality of the product, which has been constantly improved, until to-day, considering shapes and sizes, fully 1,000 varieties of rubber boots and shoes are produced.[5] One of the greatest improvements has been the lessening of the feeling of tightness and uncomfortable heat caused by the wearing of rubber shoes. In the early days of the industry rubber boots and shoes were classed as luxuries to be enjoyed only by the well-to-do. But with the assistance of new machinery and improved methods the product of this industry is now offered to the public at a price within the reach of all. The rubber shoe has demonstrated its usefulness, and to-day is generally considered a necessity.

Table 11 presents in detail, by states, the statistics for the industry, as returned at the census of 1900.

[1] India Rubber, Gutta-percha, and Balata; William T. Brannt, pages 110–120.
[2] Ibid., page 5.
[3] Ibid., pages 92–99.
[4] Rubber, W. E. Simpson, Wall Street Journal, October, 1900.
[5] One Hundred Years of American Commerce: American Rubber Manufactures, by Charles L. Johnson, Vol. II, page 503.

TABLE 11.—RUBBER BOOTS AND SHOES, BY STATES: 1900.

	United States.	Massachusetts.	Connecticut.	Rhode Island.	All other states.[1]
Number of establishments	22	6	5	6	5
Character of organization:					
Individual	1			1	
Firm and limited partnership	1				1
Incorporated company	20	6	5	5	4
Capital:					
Total	$33,667,533	$13,157,321	$9,530,718	$7,379,867	$3,599,627
Land	$939,089	$377,473	$290,400	$141,027	$130,189
Buildings	$3,554,457	$1,082,003	$856,613	$1,217,428	$398,413
Machinery, tools, and implements	$3,700,050	$898,462	$1,209,401	$976,125	$616,062
Cash and sundries	$25,473,937	$10,799,383	$7,174,304	$5,045,287	$2,454,963
Proprietors and firm members	3			1	2
Salaried officials, clerks, etc.:					
Total number	483	153	107	105	118
Total salaries	$597,239	$220,321	$150,396	$124,955	$101,567
Officers of corporations—					
Number	40	12	12	11	5
Salaries	$167,202	$49,100	$60,750	$43,520	$13,832
General superintendents, managers, clerks, etc.—					
Total number	443	141	95	94	113
Total salaries	$430,037	$171,221	$89,646	$81,435	$87,735
Men—					
Number	357	104	79	73	101
Salaries	$339,427	$156,360	$80,408	$70,702	$81,957
Women—					
Number	86	37	16	21	12
Salaries	$40,610	$14,861	$9,238	$10,733	$5,778
Wage-earners, including pieceworkers, and total wages:					
Greatest number employed at any one time during the year	17,821	6,913	5,041	3,534	2,333
Least number employed at any one time during the year	9,281	3,335	1,485	2,739	1,722
Average number	14,391	5,250	4,217	3,170	1,754
Wages	$6,426,579	$2,456,305	$1,986,023	$1,281,705	$702,546
Men, 16 years and over—					
Average number	8,248	2,921	2,461	1,726	1,140
Wages	$4,338,480	$1,672,136	$1,326,809	$809,414	$530,121
Women, 16 years and over—					
Average number	5,942	2,272	1,739	1,360	571
Wages	$2,052,462	$774,152	$653,826	$460,491	$163,993
Children, under 16 years—					
Average number	201	57	17	84	43
Wages	$35,637	$10,017	$5,388	$11,800	$8,432
Average number of wage-earners, including pieceworkers, employed during each month:					
Men, 16 years and over—					
January	8,406	3,120	2,375	1,688	1,223
February	8,353	2,912	2,546	1,673	1,222
March	6,996	2,626	1,832	1,639	899
April	8,040	2,643	2,450	1,693	1,254
May	8,909	3,363	2,618	1,744	1,184
June	8,756	3,371	2,609	1,701	1,075
July	9,136	3,413	2,793	1,730	1,200
August	8,706	2,989	2,757	1,759	1,201
September	8,331	2,822	2,592	1,773	1,204
October	8,179	2,866	2,553	1,763	997
November	7,995	2,917	2,328	1,764	986
December	7,109	2,006	2,082	1,784	1,237
Women, 16 years and over—					
January	6,269	2,595	1,727	1,290	657
February	6,061	2,293	1,836	1,275	657
March	5,070	2,223	1,120	1,247	480
April	6,246	2,626	1,792	1,275	553
May	6,867	2,639	1,913	1,322	493
June	6,312	2,610	1,925	1,353	424
July	6,683	2,638	2,043	1,410	592
August	6,982	1,946	2,026	1,399	611
September	5,937	2,017	1,878	1,433	609
October	5,966	2,070	1,887	1,441	568
November	5,911	2,375	1,523	1,431	582
December	4,500	1,238	1,192	1,449	621
Children, under 16 years—					
January	212	74	20	75	43
February	203	67	18	75	43
March	175	58	12	76	29
April	209	56	16	88	49
May	218	62	16	91	49
June	212	69	16	84	43
July	212	68	16	85	43
August	219	68	16	92	43
September	192	41	19	89	43
October	191	40	21	87	43
November	197	55	19	80	43
December	172	24	19	86	43
Miscellaneous expenses:					
Total	$2,089,154	$1,081,132	$405,852	$443,853	$158,317
Rent of works	$12,800		$11,000		$1,800
Taxes, not including internal revenue	$184,892	$127,566	$40,417	$8,888	$8,021
Rent of offices, interest, insurance, etc	$1,891,462	$953,566	$354,435	$434,965	$148,496
Materials used:					
Aggregate cost	$22,682,543	$8,837,688	$7,176,701	$3,794,027	$2,874,127
Principal materials	$22,223,946	$8,645,688	$7,055,945	$3,693,951	$2,828,367
Purchased in raw state	$14,582,768	$5,741,653	$4,887,673	$1,818,274	$2,140,168
Purchased in partially manufactured form	$7,641,178	$2,904,030	$2,168,272	$1,880,677	$688,199
Fuel	$242,619	$85,206	$71,628	$62,297	$23,488
Mill supplies	$123,869	$76,988	$17,238	$22,184	$7,509
Freight	$92,109	$29,861	$31,890	$15,595	$14,763

[1] Includes establishments distributed as follows: Missouri, 1; New Jersey. 2; Pennsylvania, 2.

TABLE 11.—RUBBER BOOTS AND SHOES, BY STATES: 1900—Continued.

	United States.	Massachusetts.	Connecticut.	Rhode Island.	All other states.
Products:					
Aggregate value	$41,089,819	$16,490,015	$11,999,038	$8,034,417	$4,566,349
Boots and shoes, rubber:					
Total number of pairs	49,979,229	19,750,961	15,375,035	10,090,357	4,762,876
Total value	$38,761,320	$15,773,553	$11,513,072	$7,051,812	$4,422,883
Men's—					
Total number of pairs	24,686,643	9,287,815	7,689,297	5,248,289	2,461,292
Total value	$27,160,177	$11,195,770	$7,921,802	$4,593,846	$3,448,759
Rubber boots—					
Number of pairs	3,512,421	2,082,541	770,569	198,619	460,692
Value	$10,572,214	$6,465,974	$2,400,637	$460,432	$1,245,171
Rubber shoes—					
Number of pairs	10,651,684	3,751,082	3,983,525	2,137,672	779,405
Value	$5,518,515	$1,674,087	$2,163,097	$1,185,504	$495,827
Rubber tennis shoes—					
Number of pairs	1,424,448	623,426	80,000	748,728	22,294
Value	$634,041	$336,277	$20,000	$268,888	$8,876
Arctic overs—					
Number of pairs	4,672,862	1,690,052	969,005	1,556,321	457,484
Value	$4,815,075	$1,602,013	$922,668	$1,795,733	$494,661
Lumbermen's overs—					
Number of pairs	4,229,899	996,962	1,936,198	558,766	737,973
Value	$5,488,166	$1,031,158	$2,415,400	$842,550	$1,199,058
Felt boots—					
Number of pairs	147,196	143,752	.....	.....	3,444
Value	$91,427	$86,261	.....	.....	$5,166
Other varieties—					
Number of pairs	48,133	.....	.....	48,133	.....
Value	$40,739	.....	.....	$40,739	.....
Women's—					
Total number of pairs	18,847,355	8,105,873	6,247,549	2,964,976	1,528,957
Total value	$8,165,695	$3,042,142	$2,969,100	$1,504,691	$649,762
Rubber boots—					
Number of pairs	303,622	159,174	86,485	29,246	28,717
Value	$464,264	$219,680	$153,055	$50,072	$41,457
Rubber shoes—					
Number of pairs	16,118,746	7,102,051	5,579,019	2,086,385	1,346,291
Value	$5,925,474	$2,231,765	$2,360,254	$842,211	$491,244
Rubber tennis shoes—					
Number of pairs	346,744	220,807	21,456	99,661	4,820
Value	$185,199	$129,357	$15,044	$38,987	$1,811
Arctic overs—					
Number of pairs	2,003,286	623,841	551,330	678,986	149,129
Value	$1,535,962	$461,340	$431,488	$527,884	$115,250
Lumbermen's overs—					
Number of pairs	9,259	.....	9,259	.....	.....
Value	$9,259	.....	$9,259	.....	.....
Other varieties—					
Number of pairs	70,698	.....	.....	70,698	.....
Value	$45,537	.....	.....	$45,537	.....
Children's—					
Total number of pairs	6,445,231	2,357,273	1,438,189	1,877,142	772,627
Total value	$3,435,448	$1,535,641	$622,170	$953,275	$324,362
Rubber boots—					
Number of pairs	623,009	444,889	84,545	33,641	59,934
Value	$1,123,060	$906,406	$99,827	$45,795	$71,032
Rubber shoes—					
Number of pairs	4,135,463	1,433,434	1,186,167	1,010,151	505,711
Value	$1,299,182	$342,197	$425,176	$381,025	$150,784
Rubber tennis shoes—					
Number of pairs	558,089	206,726	20,000	298,224	33,139
Value	$249,484	$123,541	$12,000	$101,993	$11,950
Arctic overs—					
Number of pairs	971,613	224,296	138,850	492,297	116,170
Value	$634,710	$135,437	$82,827	$371,974	$44,472
Lumbermen's overs—					
Number of pairs	145,418	47,928	8,627	31,602	57,261
Value	$122,176	$28,060	$2,840	$46,260	$45,016
Felt boots—					
Number of pairs	412	.....	.....	.....	412
Value	$608	.....	.....	.....	$608
Other varieties—					
Number of pairs	11,227	.....	.....	11,227	.....
Value	$6,228	.....	.....	$6,228	.....
Value of all other products, including custom work and repairing	$2,328,499	$716,462	$485,966	$982,605	$143,466
Comparison of products:					
Number of establishments reporting for both years	17	4	4	5	4
Value for census year	$37,581,998	$14,167,116	$10,974,884	$8,010,042	$4,429,956
Value for preceding business year	$31,541,079	$12,040,550	$9,499,324	$6,356,068	$3,645,137
Power:					
Number of establishments reporting	22	6	5	6	5
Total horsepower	25,205	8,415	7,870	5,595	3,325
Owned:					
Engines (steam)—					
Number	88	27	27	23	11
Horsepower	23,442	8,190	6,467	5,460	3,325
Water wheels—					
Number	14	4	10	.....	.....
Horsepower	1,525	175	1,350	.....	.....
Electric motors—					
Number	15	.....	8	7	.....
Horsepower	188	.....	53	135	.....
Other power—					
Number	1	1	.....	.....	.....
Horsepower	50	50	.....	.....	.....
Furnished to other establishments—					
Horsepower	550	.....	550	.....	.....
Establishments classified by number of persons employed, not including proprietors and firm members:					
Total number of establishments	22	6	5	6	5
51 to 100	1	.....	.....	1	.....
101 to 250	3	1	1	1	.....
251 to 500	3	.....	.....	1	2
501 to 1,000	6	1	1	1	3
1,001 to 5,000	9	4	3	2	.....

LEATHER GLOVES AND MITTENS.

LEATHER GLOVES AND MITTENS.

By Arthur L. Hunt.

The following tables, with the exceptions noted below, present the statistics concerning the establishments engaged exclusively in the manufacture of leather gloves and mittens during the census year ending May 31, 1900. The general classification adopted by the Census Office includes every variety of gloves and mittens manufactured, whether of leather or other material, except knit gloves and mittens; therefore it is impossible to present comparative statistics for establishments engaged exclusively in the manufacture of leather gloves and mittens for previous censuses. Inasmuch, however, as the manufacture of gloves and mittens of materials other than leather has formed a comparatively small branch of the combined industry at the several censuses, the statistics for the combined industry fairly indicate the growth in the manufacture of leather gloves and mittens. Table 1 is a comparative summary of the combined industry as returned at the censuses of 1850 to 1900, with the percentages of increase for each decade.

Table 1.—GLOVES AND MITTENS: COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.						PER CENT OF INCREASE.				
	1900[1]	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	397	324	300	221	126	110	22.5	8.0	35.7	75.4	14.5
Capital	$9,127,309	$5,977,820	$3,379,648	$2,340,550	$594,825	$181,200	52.7	76.9	44.4	293.5	228.3
Salaried officials, clerks, etc., number	661	[2]482	(3)	(3)	(3)	(3)	37.1	.....	.....	.....	.....
Salaries	$548,520	[2]$438,664	(3)	(3)	(3)	(3)	25.0	.....	.....	.....	.....
Wage-earners, average number	14,436	8,187	7,697	4,058	1,429	1,938	76.3	6.4	89.7	184.0	[4]26.3
Total wages	$4,217,345	$2,670,344	$1,655,695	$980,549	$330,419	$233,496	58.0	61.3	68.9	196.8	41.5
Men, 16 years and over	4,402	2,998	2,102	1,127	453	329	46.8	42.6	86.5	148.8	37.7
Wages	$2,030,554	$1,506,385	(3)	(3)	(3)	(3)	34.8	.....	.....	.....	.....
Women, 16 years and over	9,754	5,091	5,249	2,894	976	1,609	91.6	[4]3.0	81.4	196.5	[4]39.3
Wages	$2,150,480	$1,150,943	(3)	(3)	(3)	(3)	86.8	.....	.....	.....	.....
Children, under 16 years	280	98	346	37	(3)	(3)	185.7	[4]71.7	835.1	.....	.....
Wages	$36,311	$13,016	(3)	(3)	(3)	(3)	182.8	.....	.....	.....	.....
Miscellaneous expenses	$568,582	$426,937	(5)	(5)	(5)	(5)	33.2	.....	.....	.....	.....
Cost of materials used	$9,554,105	$5,021,144	$4,351,469	$1,884,146	$537,589	$322,837	90.3	15.4	131.0	250.5	66.5
Value of products, including custom work and repairing	$17,048,656	$10,103,821	$7,379,605	$3,998,521	$1,176,795	$708,184	68.7	36.9	84.6	239.8	66.2

[1] The figures reported for 1900 include the statistics for 3 establishments, the schedules for which were received too late to be included in the totals for this industry as presented in the Report on Manufactures, Parts I and II.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table.
[3] Not reported separately.
[4] Decrease.
[5] Not reported.

Table 1 shows the notable growth which has occurred in the glove industry during the past half century. Although the manufacture of gloves and mittens was of commercial importance as early as 1810, the census of 1850 was the first at which the statistics were sufficiently accurate to justify a detailed comparison. In that year returns were received from 110 establishments, reporting a capital of $181,200, and a product valued at $708,184. In 1900, returns were received from 397 establishments, an increase of 287, or 260.9 per cent. The capital increased from $181,200 to $9,127,309, an increase of $8,946,109, while the value of products increased to $17,048,656, an increase of $16,340,472. Reports were received from 126 establishments in 1860, showing an increase of but 14.5 per cent as compared with 1850, while the capital increased to $594,825, an increase of $413,625, or 228.3 per cent, and the value of products increased from $708,184 to $1,176,795, an increase of $468,611, or 66.2 per cent. The increase between 1860 and 1870 was primarily due to the large demand for gloves for the military service during the Civil War. During this period the number of establishments increased 95, or 75.4 per cent; the capital increased $1,745,725, or 293.5 per cent; and the value of products, $2,821,726, or 239.8 per cent. Since 1870 the industry has steadily increased. In 1900 the number of establishments was 397, an increase since 1890 of 73, or 22.5 per cent. During the decade the capital increased

from $5,977,820 to $9,127,309, an increase of $3,149,489, or 52.7 per cent, while the value of products increased from $10,103,821 to $17,048,656, or 68.7 per cent.

A comparison of the average capital per establishment for the several decades indicates the changes which have taken place in the industry during the past half century. In 1850 the average capital per establishment was $1,647, and in 1860 it was $4,721, an increase of $3,074, or 186.6 per cent. This comparatively large increase was probably due to the introduction, in 1852, of the sewing machine for glove manufacturing. Previous to this time all gloves were made by hand and very few people worked in the factories, most of the work being done by "home workers." Between 1860 and 1870 the average capital increased to $10,591, an increase of $5,870, or 124.3 per cent. From 1870 the average capital has shown a steady increase; in 1900 it was $22,991 per establishment. Table 1 indicates that the capital invested in the glove industry by the 110 establishments in 1850 was $181,200, a sum less than the amount of capital employed by several of the large glove factories of the present time. The value of products in 1850 was nearly four times the amount of capital reported. The ratio of capital to product since 1850 has remained comparatively the same. In 1850 the amount paid in wages exceeded the capital, but in each subsequent decade, with the exception of 1860, the amount of wages was less than one-half the amount invested in capital.

Table 2 is a comparative summary of the statistics for gloves and mittens manufactured from all materials, and from leather, with the per cent that the total of leather gloves and mittens formed of the combined total. Table 2 includes the statistics for 3 establishments, the schedules for which were received too late to be included in the totals as given in the general report for the industry as presented in Manufactures, Parts I and II.

TABLE 2.[1]—COMPARATIVE SUMMARY, GLOVES AND MITTENS OF ALL MATERIALS, AND OF LEATHER, WITH THE PER CENT THAT LEATHER GLOVES AND MITTENS FORMED OF THE TOTAL: 1900.

	All materials.	Leather.	Per cent of leather to total.
Number of establishments	397	381	96.0
Capital	$9,127,309	$9,004,427	98.7
Salaried officials, clerks, etc., number	661	637	96.4
Salaries	$548,520	$544,170	99.2
Wage-earners, average number	14,486	14,180	98.2
Total wages	$4,217,845	$4,151,126	98.4
Men, 16 years and over	4,402	4,364	99.1
Wages	$2,030,554	$2,014,134	99.2
Women, 16 years and over	9,754	9,542	97.8
Wages	$2,150,480	$2,101,044	97.7
Children, under 16 years	280	274	97.9
Wages	$36,811	$35,948	97.7
Miscellaneous expenses	$568,582	$562,870	99.0
Cost of materials used	$9,554,105	$9,382,102	98.2
Value of products, including custom work and repairing	$17,048,656	$16,721,234	98.1

[1] Includes the statistics for 3 establishments, the schedules for which were received too late to be included in Manufactures, Parts I and II. These establishments are distributed as follows: New Jersey, 1; New York, 1; Ohio, 1.

It appears that 381 establishments, or 96 per cent of the total number reported, were engaged in the manufacture of leather gloves and mittens during the census year, as compared with 397 establishments, the total for the combined industry. The capital was $9,004,427, or 98.7 per cent of the total capital; 14,180 wage-earners were employed, or 98.2 per cent of the total number reported; the cost of materials was $9,382,102, or 98.2 per cent of the total cost of materials; and the value of products was $16,721,234, or 98.1 per cent of the total. In this connection, however, it should be stated that many establishments use large quantities of jersey cloth and knit goods in the manufacture of the cheaper grades of leather gloves and mittens, and this feature of the industry may be said to be constantly increasing.

The individual form of organization appears to predominate in this industry. Of the total number of establishments, 222, or 58.3 per cent, were conducted by individuals. Of the remaining number 125, or 32.8 per cent, were operated by firms or limited partnerships, 33, or 8.6 per cent, by incorporated companies, and the 1 remaining was miscellaneous in character.

Table 3 is a summary of the capital reported for 1900, with the per cent of each item to the total.

TABLE 3.—CAPITAL: 1900.

	Amount.	Per cent of total.
Total	$9,004,427	100.0
Land	286,237	3.2
Buildings	582,095	6.5
Machinery, tools, and implements	675,650	7.5
Cash and sundries	7,460,445	82.8

The total capital invested was given as $9,004,427, and of the several items, cash and sundries, including cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries, amounted to $7,460,445, or 82.8 per cent of the total. The preponderance of this item is, in a measure, due to the fact that a number of the larger manufacturers are heavy importers of leather, and the general statement may be made that glove manufacturers keep large quantities of leather on hand, together with costly furs, which are used for linings. The second largest item of capital was that reported for machinery, tools, and implements, and amounted to $675,650, or 7.5 per cent of the total. The value of land and of buildings formed 3.2 and 6.5 per cent of the total capital, respectively. The capital reported does not include the capital stock of any of the corporations, but only the actual capital utilized in the business.

Table 4 shows the total number of wage-earners with wages, the number of men, women, and children with wages, and the per cent of each to the total number, by geographic divisions, for 1900.

TABLE 4.—WAGE-EARNERS, BY GEOGRAPHIC DIVISIONS: 1900.

GEOGRAPHIC DIVISIONS.	TOTAL.		MEN, 16 YEARS AND OVER.			WOMEN, 16 YEARS AND OVER.			CHILDREN, UNDER 16 YEARS.		
	Average number.	Wages.	Average number.	Per cent of total number.	Wages.	Average number.	Per cent of total number.	Wages.	Average number.	Per cent of total number.	Wages.
United States	14,180	$4,151,126	4,364	30.8	$2,014,134	9,542	67.3	$2,101,044	274	1.9	$35,948
New England states	444	169,290	203	45.7	99,142	220	49.6	67,256	21	4.7	2,892
Middle states	10,218	2,814,789	2,937	28.7	1,345,568	7,212	70.6	1,458,995	69	0.7	10,176
Southern states	262	46,450	43	16.4	15,950	192	73.3	28,000	27	10.3	2,500
Central states	2,599	881,718	990	38.1	451,130	1,476	56.8	413,508	133	5.1	17,080
Western states	5	1,476	2	40.0	820	3	60.0	656			
Pacific states	652	237,453	189	29.0	101,524	439	67.3	132,629	24	3.7	3,300

The total number of wage-earners was reported as 14,180, and the total wages as $4,151,126. Of the total number of wage-earners, 4,364, or 30.8 per cent, were men, receiving $2,014,134 for wages. The number of women was 9,542, or 67.3 per cent of the total number, and the wages received were given as $2,101,044. The total number of children was 274, receiving $35,948 as wages. With the exception of the operation of heavy machines for wax-thread work and palming, together with the cutting and preparation of the skin, which is done by the men, glove making is mostly done by women. In this connection it should be stated that, inasmuch as a great majority of the persons employed in this industry are pieceworkers, any deductions from the above table relative to the average rate of wages would be misleading. The making by "home workers" is an important and interesting phase of their manufacture, and since the inception of the industry much of the glove making has been done at the homes of families, the members of which were unable, on account of various household duties, to take employment in a factory. Many of the large glove and mitten manufacturers of Gloversville and Johnstown, N. Y., employ delivery teams to distribute and collect the work of the home workers. The following extract from a letter received by the division of statistics of the Agricultural Department from a prominent glove manufacturer of Fulton county, who has been intimately associated with the growth and development of the leather glove and mitten industry in this country, illustrates the extent to which gloves and mittens are made by farmers' families.

I have seen all large putters-out of gloves to country makers and from talks with them and manufacturers who have many farmers' families get work directly from them, I think I am very nearly correct in the following estimate of the number of farmers' families who make gloves:

Northville, with the adjoining towns in Hamilton and Saratoga counties	200
Broadalbin and Perth, with adjoining towns in Saratoga county	200
Garoga and Stratford, with adjoining towns in Herkimer county	150
Ephratah and Oppenheim, with adjoining towns in Herkimer county	250
Montgomery county	200
	1,000

This is but a rough estimate, and probably a full count of all families who do but a few dozens of pairs a year would add 100 or more to the above. All stitching on the backs of gloves is done in factories before they are sent out. The price of making varies from 20 cents per dozen for the cheapest gloves to $1 per dozen for full outseam. The earnings vary as greatly. A general average would be about $10 per month, although many women average 75 cents per day. There is not as much work sent out to farms as twenty years ago, but our two cities have grown up by farmers' families moving in and taking work daily from the factories. Only the high-priced work is made in factories, where not as many female operators are employed as there were ten years ago. I would estimate the total earnings of farmers' families in glove making to be about $125,000 per year. A farmer's daughter usually learns making on her mother's machine and then buys one costing about $35 for herself. Any girl naturally handy at sewing can learn to make common gloves in a week. All silk and thread are furnished by the manufacturers.

The schedule of inquiry adopted for 1890 was the first which contained questions designed to show the cost of manufacture other than for wages and materials. The questions of the Twelfth Census relating to miscellaneous expenses were made as uniform as possible with those of the previous census. The returns for 1900 are shown in Table 5, together with the per cent of each item to the total.

TABLE 5.—MISCELLANEOUS EXPENSES: 1900.

	Amount.	Per cent of total.
Total	$562,870	100.0
Rent of works	85,888	15.2
Taxes, not including internal revenue	23,466	4.2
Rent of offices, insurance, interest, repairs, advertising, and other sundries	359,721	63.9
Contract work	93,795	16.7

The amount paid for rent of offices, insurance, interest, internal-revenue tax and stamps, ordinary repairs of buildings and machinery, advertising, and all other sundries not reported under the head of materials, was $359,721, or 63.9 per cent of the total. This item does not include expense incurred for new equipment, machinery, and other apparatus, but only the amount expended for general repairs of buildings and machinery, and other minor expenses incident to the conduct of the business. The remaining items reported under miscellaneous expenses formed but a relatively small per cent of the total amount reported.

Table 6 shows the cost of the different materials used in the manufacture of leather gloves and mittens, with the per cent each item formed of the total for 1900.

TABLE 6.—COST OF MATERIALS USED: 1900.

	Amount.	Per cent of total.
Total	$9,382,102	100.0
Hides and skins	7,356,433	78.4
Fuel	42,230	0.5
Rent of power and heat	19,919	0.2
Mill supplies	12,619	0.1
All other materials	1,904,778	20.3
Freight	46,123	0.5

The aggregate cost of materials was $9,382,102, of which $7,356,433, or 78.4 per cent, represented the cost of hides and skins; the remaining $2,025,669, or 21.6 per cent, was made up of the cost of fuel, rent of power and heat, mill supplies, freight, and all other materials. Of these latter, the cost of all other materials was the largest item, amounting to $1,904,778, or 20.3 per cent of the total. Under this head is the amount expended for furs of all descriptions, silk, thread, buttons, fasteners, and numerous other incidentals which are required for a complete glove or mitten.

Table 7 shows the quantities and cost of the different varieties of hides and skins used, the average cost per dozen, and the per cent of each variety to the total quantity and cost, for 1900.

TABLE 7.—QUANTITIES AND COST OF HIDES AND SKINS USED: 1900.

	QUANTITY.		COST.		
	Dozens.	Per cent of total.	Total.	Per cent of total.	Average per dozen.
Total	826,416	100.0	$7,356,433	100.0	$8.90
Deerskins	89,596	10.8	1,146,808	15.6	12.80
Mochas, Arabian sheepskins	105,372	12.7	1,071,636	14.6	10.17
Cabretta, Brazilian sheepskins	6,432	0.8	47,399	0.6	7.37
Roans, all kinds of domestic sheepskins	422,481	51.1	2,256,511	30.7	5.34
Horse and cow hides	30,180	3.7	1,352,148	18.4	44.80
Kid, imported	70,824	8.6	740,170	10.1	10.45
Kid, domestic	97,245	11.8	708,800	9.6	7.29
All other varieties	4,286	0.5	32,961	0.4	7.69

It appears from Table 7 that 826,416 dozens of hides and skins, valued at $7,356,433, were used. This is an average cost of $8.90 per dozen. Roans, including all kinds of domestic sheepskins, formed the principal material from which gloves and mittens were manufactured; 422,481 dozen skins of this variety were used, costing $2,256,511, or 30.7 per cent of the total cost of leather, the average cost being $5.34 per dozen. The mochas formed the second principal material used in point of number of dozens, although the cost of both horse and cow hides and deerskins exceeded the cost of the mochas. Relative to the quantity of horse and cow hides, it should be stated that as a rule they were reported by manufacturers as purchased by the square foot. However, in order to make them comparable with the other varieties of hides and skins, they were reduced to dozens. A horse or cow hide is generally split up the back, being two sides to the skin. The large users estimated 15 square feet to the side, or 30 square feet to the hide. The number of dozens reported was computed by considering the two sides as composing a hide. The number of square feet was given as 10,864,607. The cost of imported kid skins used exceeded that of domestic, although the quantity of the latter was larger. Under "all other varieties" are included a number of different varieties of skins, such as seal, hog, and dog. Attention should here be directed to the fact that the average cost is computed from the totals of the whole number of establishments from which reports were received, and therefore must not be assumed to be indicative of the actual cost in any particular section of the country.

In addition to the materials reported in Table 7, there were 7 establishments, engaged in other industries, which manufactured leather gloves and mittens as a by-product. These establishments reported $106,114 for materials used for glove manufacture, as follows: Deerskins, 1,962 dozen, costing $25,799; mochas, 191 dozen, costing $2,091; cabretta, 35 dozen, costing $274; roans, 3,490 dozen, costing $18,159; kid, imported, 1,000 dozen, costing $11,981; kid, domestic, 2,116 dozen, costing $14,698; and 734 dozen horse and cow hides, costing $33,112. In this connection it is interesting to note the grade of gloves and mittens into which each variety of leather is cut. Mocha and imported kid are used for men's, women's, and children's fine lined and unlined gloves and mittens, and the domestic kid is made into the more common varieties. The cabretta and Brazilian sheepskins are cut into men's medium-grade gloves for driving. The roans, or domestic sheepskins, are made into men's low-grade gloves and mittens, the cheapest leather gloves made. The deerskins are cut into men's gloves and mittens; the horse and cow hides and the goat and seal skins are used as a substitute for deerskins in the manufacture of men's imitation buck gloves and mittens. In a general way the quantity of the different hides and skins reported for each state reflects the quality of gloves and mittens manufactured in that state. Reference to Table 13 shows that New York led in the consumption of every variety of hides and skins except horse and cow hides. Illinois led in the consumption of horse and cow hides, followed by New York, Wisconsin, and California, in the order named. In the consumption of domestic sheepskins New York ranked first, followed by Illinois, Indiana, California, and Wisconsin, in the order named.

That Illinois and Wisconsin have become large consumers of sheepskins and horse and cow hides during the decade seems to be due to the growing tendency to

manufacture as near as possible to the source of supply, and as sheep pelts and horse and cow hides are now largely dressed for gloves in these states, it is but natural that glove and mitten manufacturers have taken advantage of the opportunity to establish factories in close proximity to the source of the materials required by them.

Table 8 is a summary of the value of products, the number of dozens of pairs, and the value of the different varieties of gloves and mittens, the per cent of each variety to the total quantity and value of gloves and mittens, and the average value per dozen pairs, for 1900.

TABLE 8.—QUANTITIES AND VALUES OF PRODUCTS: 1900.

	Quantity (dozens of pairs).	VALUE.		PER CENT OF TOTAL, GLOVES AND MITTENS.	
		Total.	Average per dozen pairs.	Quantity.	Value.
Aggregate	.....	$16,721,234	.....	.....	.....
Gloves and mittens	2,895,661	16,039,168	$5.54	.....	.....
All other products	.....	682,066	.....	.....	.....
Total, gloves and mittens	2,895,661	16,039,168	5.54	100.0	100.0
Men's	2,267,327	12,418,258	5.48	78.3	77.4
Lined	952,820	4,959,902	5.21	32.9	30.9
Unlined	1,314,507	7,458,356	5.67	45.4	46.5
Women's	323,826	2,461,760	7.60	11.2	15.3
Lined	78,783	538,362	6.83	2.7	3.4
Unlined	221,039	1,772,746	8.02	7.7	11.0
Gauntlets	24,004	150,652	6.27	0.8	0.9
Boys' and youths'	247,465	926,059	3.74	8.5	5.8
Lined	148,493	548,556	3.69	5.1	3.4
Unlined	98,972	377,503	3.81	3.4	2.4
Misses' and children's	57,043	233,091	4.09	2.0	1.5
Lined	39,873	160,998	4.04	1.4	1.0
Unlined	17,170	72,093	4.20	0.6	0.5
Lined	1,219,969	6,207,818	5.09	42.1	38.7
Unlined	1,651,688	9,680,698	5.86	57.1	60.4
Gauntlets	24,004	150,652	6.27	0.8	0.9

Table 8 shows that the total value of products was $16,721,234. Of this amount, $16,039,168, or 95.9 per cent of the total, was the value of 2,895,661 dozens of pairs of gloves and mittens, while $682,066, or 4.1 per cent of the total, was reported as the value of all other products, including the amounts received for custom work and repairing.

Table 8 shows the proportions of the different varieties of gloves and mittens manufactured, and indicates that men's gloves and mittens formed over 75 per cent of the total quantity and value.

Of the total quantity and value of gloves and mittens, 1,219,969 dozens of pairs, valued at $6,207,818, or 42.1 per cent of the total quantity and 38.7 per cent of the total value, were lined, with an average value of $5.09 per dozen pairs; 1,651,688 dozens of pairs, valued at $9,680,698, or 57.1 per cent of the total quantity and 60.4 per cent of the total value, were unlined, with an average value of $5.86 per dozen pairs. It is interesting to note the relative percentages of lined to unlined gloves and mittens. It has been customary to line the heavier and coarser working gloves and also some varieties of street gloves for winter wear, but it was not until about 1899 that silk linings for the finest grades of gloves came into general use; since then they have become decidedly popular, especially with the mocha glove. Gauntlets formed less than 1 per cent of the total quantity and value of gloves and mittens reported. Attention should also be called to the fact that the values are those obtained at the factory, and as the averages are computed from the totals of the entire number of establishments reporting, and as the varieties, styles, and grades of gloves and mittens are legion, the figures reported must not be taken as indicative of the price in any particular locality or of any specific grade of glove or mitten.

In addition to the above, the 7 establishments already referred to manufactured 32,971 dozen pairs of gloves and mittens, valued at $217,157, divided as follows: 25,327 dozen pairs of men's gloves and mittens, valued at $171,105, of which 15,788 dozen pairs, valued at $118,715, were unlined, and 9,539 dozen pairs, valued at $52,390, were lined; 6,024 dozen pairs of unlined women's gloves, valued at $39,771; also 1,620 dozen pairs of boys' and youths' gloves and mittens, valued at $6,281, of which 1,215 dozen pairs, valued at $4,894, were lined, and 405 dozen pairs, valued at $1,387, were unlined. A combination of the number of pairs manufactured by glove establishments and those reported as a by-product of other leather industries shows that there were 35,142,852 pairs of gloves and mittens of all descriptions manufactured during the census year, valued at $16,256,325. This was nearly equivalent to one pair for every two persons in the United States.

Table 9 is a summary of the quantity and value of gloves and mittens manufactured in each state and in each group of states for 1900.

TABLE 9.—QUANTITY AND VALUE OF GLOVES AND MITTENS, BY STATES AND TERRITORIES, ARRANGED GEOGRAPHICALLY: 1900.

STATES AND TERRITORIES.	TOTAL.		MEN'S.					
			Total.		Lined.		Unlined.	
	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.
The United States	2,895,661	$16,039,168	2,267,327	$12,418,258	952,820	$4,959,902	1,314,507	$7,458,356
New England states	85,680	574,996	57,077	340,214	14,972	100,208	42,105	240,011
New Hampshire	49,085	281,186	44,385	256,686	10,800	76,200	33,585	180,436
Massachusetts	34,673	286,210	11,092	77,478	2,622	18,408	8,470	59,075
Other states[1]	1,922	7,600	1,600	6,100	1,550	5,600	50	500
Middle states	1,759,396	10,800,039	1,313,772	7,999,894	650,911	3,593,419	662,861	4,406,475
New York	1,721,831	10,507,789	1,280,595	7,731,868	643,440	3,547,825	637,155	4,184,043
New Jersey	18,755	171,065	16,697	152,931	1,004	9,564	15,693	143,367
Pennsylvania	9,223	88,500	8,223	35,625	4,910	22,050	3,313	13,575
Maryland	9,587	82,685	8,257	79,470	1,557	13,980	6,700	65,490
Southern states[2]	41,776	202,973	41,109	198,725	15,208	91,375	25,901	107,350
Central states	879,760	3,516,987	749,009	3,076,610	259,361	1,078,875	489,648	1,997,735
Ohio	43,386	95,390	43,286	94,940	18,770	39,190	24,516	55,750
Michigan	15,225	54,725	15,175	54,275	550	4,600	14,625	49,675
Illinois	573,411	2,324,698	472,483	2,010,629	105,546	520,558	366,937	1,490,071
Wisconsin	95,235	493,875	89,255	461,922	58,790	253,287	30,465	208,635
Minnesota	2,873	20,628	2,873	20,628	2,088	12,490	785	8,138
Iowa	52,463	238,400	41,370	172,600	4,750	30,000	36,620	142,600
Other states[3]	97,167	289,771	84,567	261,616	68,867	218,750	15,700	42,866
Western states[4]	2,048	13,391	1,966	12,781	526	3,430	1,440	9,351
Pacific states	127,001	930,782	104,394	790,034	11,842	92,600	92,552	697,434
California	121,301	887,239	98,969	748,091	11,692	91,100	87,277	656,991
Other states[5]	5,700	43,543	5,425	41,943	150	1,500	5,275	40,443

STATES AND TERRITORIES.	WOMEN'S.							
	Total.		Lined.		Unlined.		Gauntlets.	
	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.
The United States	323,826	$2,461,760	78,783	$588,362	221,039	$1,772,746	24,004	$150,652
New England states	24,216	212,282	37	300	24,179	211,782	20	200
New Hampshire	500	2,750	.....	.....	500	2,750	.....	.....
Massachusetts	23,581	208,732	.....	.....	23,581	208,732	.....	.....
Other states[1]	135	800	37	300	78	800	20	200
Middle states	265,007	2,006,862	70,647	497,178	177,266	1,406,758	17,094	102,926
New York	262,129	1,986,918	70,189	492,044	174,896	1,391,948	17,094	102,926
New Jersey	2,058	18,134	508	5,134	1,550	13,000	.....	.....
Pennsylvania	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	820	1,810	.....	.....	820	1,810	.....	.....
Southern states[2]	363	3,025	180	1,365	155	1,240	28	420
Central states	20,656	133,535	6,069	28,379	11,967	89,446	2,620	15,710
Ohio	.....	.....	.....	.....	.....	.....	.....	.....
Michigan	50	450	50	450	.....	.....	.....	.....
Illinois	10,501	61,165	3,593	15,065	4,758	33,050	2,150	13,050
Wisconsin	1,965	15,520	976	6,564	979	8,896	10	60
Minnesota	.....	.....	.....	.....	.....	.....	.....	.....
Iowa	8,040	56,000	1,450	6,300	6,230	47,500	360	2,200
Other states[3]	100	400	.....	.....	.....	.....	100	400
Western states[4]	72	588	40	240	.....	.....	32	348
Pacific states	13,512	105,468	1,810	10,900	7,492	63,520	4,210	31,048
California	13,412	104,568	1,810	10,900	7,392	62,620	4,210	31,048
Other states[5]	100	900	.....	.....	100	900	.....	.....

[1] Includes establishments distributed as follows: Maine, 1; Rhode Island, 1; Connecticut, 1.
[2] Includes establishments distributed as follows: West Virginia, 1; Virginia, 3; Oklahoma, 1.
[3] Includes establishments distributed as follows: Indiana, 3; Missouri, 2.
[4] Includes establishments distributed as follows: Montana, 1; Nebraska, 1; Utah, 1; Colorado, 1.
[5] Includes establishments distributed as follows: Washington, 3; Oregon, 2.

TABLE 9.—QUANTITY AND VALUE OF GLOVES AND MITTENS, BY STATES AND TERRITORIES, ARRANGED GEOGRAPHICALLY: 1900—Continued.

STATES AND TERRITORIES.	BOYS' AND YOUTHS'.						MISSES' AND CHILDREN'S.					
	Total.		Lined.		Unlined.		Total.		Lined.		Unlined.	
	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.	Dozens of pairs.	Value.
The United States	247,465	$926,059	148,493	$548,556	98,972	$377,503	57,043	$233,091	39,873	$160,998	17,170	$72,093
New England states	4,300	22,200	1,050	6,200	3,250	16,000	87	300	44	150	43	150
New Hampshire	4,200	21,800	1,000	6,000	3,200	15,800	.....	.....	.....	.....	.....	.....
Massachusetts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other states[1]	100	400	50	200	50	200	87	300	44	150	43	150
Middle states	128,088	575,650	87,629	374,900	40,459	200,750	52,529	217,633	36,982	152,125	15,547	65,508
New York	126,578	571,370	86,419	371,575	40,159	199,795	52,529	217,633	36,982	152,125	15,547	65,508
New Jersey	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	1,000	2,875	900	2,475	100	400	.....	.....	.....	.....	.....	.....
Maryland	510	1,405	310	850	200	555	.....	.....	.....	.....	.....	.....
Southern states[2]	227	874	102	374	125	500	77	349	27	149	50	200
Central states	107,235	297,943	57,682	159,680	49,553	138,263	2,860	8,899	2,820	8,574	40	325
Ohio	100	450	100	450	.....	.....	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois	87,572	244,029	40,515	113,550	47,057	130,479	2,855	8,875	2,815	8,550	40	325
Wisconsin	4,010	15,909	3,032	12,325	978	3,584	5	24	5	24	.....	.....
Minnesota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa	3,053	9,800	2,035	6,600	1,018	3,200	.....	.....	.....	.....	.....	.....
Other states[3]	12,500	27,755	12,000	26,755	500	1,000	.....	.....	.....	.....	.....	.....
Western states[4]	10	22	10	22	.....	.....	.....	.....	.....	.....	.....	.....
Pacific states	7,605	29,370	2,020	7,380	5,585	21,990	1,490	5,910	.....	.....	1,490	5,910
California	7,455	28,770	2,020	7,380	5,435	21,390	1,465	5,810	.....	.....	1,465	5,810
Other states[5]	150	600	.....	.....	150	600	25	100	.....	.....	25	100

[1] Includes establishments distributed as follows: Maine, 1; Rhode Island, 1; Connecticut, 1.
[2] Includes establishments distributed as follows: West Virginia, 1; Virginia, 3; Oklahoma, 1.
[3] Includes establishments distributed as follows: Indiana, 3; Missouri, 2.
[4] Includes establishments distributed as follows: Montana, 1; Nebraska, 1; Utah, 1; Colorado, 1.
[5] Includes establishments distributed as follows: Washington, 3; Oregon, 2.

Table 9 indicates that of the total quantity of gloves and mittens, 1,759,396 dozens of pairs, or 60.8 per cent, were manufactured in the Middle states, and 879,760 dozens of pairs, or 30.4 per cent, were manufactured in the Central states. The quantity reported in the Pacific states formed 4.4 per cent of the total quantity. The leading 5 states, ranked according to the quantity of gloves and mittens manufactured, with the number of dozens of pairs reported by each, are as follows: New York, 1,721,831; Illinois, 573,411; California, 121,301; Wisconsin, 95,235; and Indiana, 92,300. The combined output of these states was 2,604,078 dozens of pairs, or 89.9 per cent of the total number manufactured in the United States.

Table 10 shows the totals for Fulton county in comparison with the state of New York, and also the totals for that state in comparison with the totals for the United States.

TABLE 10.—COMPARATIVE SUMMARY OF STATISTICS FOR FULTON COUNTY, N. Y., NEW YORK STATE, AND THE UNITED STATES: 1900.

	United States.	NEW YORK.		FULTON COUNTY.							
		Total.	Per cent of United States total.	Total.	Per cent of United States total.	Cities.				Outside of cities.	Per cent of county total.
						Gloversville.	Per cent of county total.	Johnstown.	Per cent of county total.		
Number of establishments	381	243	63.8	166	43.6	101	60.9	49	29.5	16	9.6
Capital	$9,004,427	$6,219,647	69.1	$5,517,850	61.3	$3,660,383	66.3	$1,686,604	30.6	$170,863	3.1
Salaried officials, clerks, etc., number	637	328	51.5	250	39.2	171	68.4	72	28.8	7	2.8
Salaries	$544,170	$294,574	54.1	$244,522	44.9	$177,551	72.6	$64,114	26.2	$2,857	1.2
Wage-earners, average number	14,180	9,907	69.9	7,931	55.9	5,183	65.4	2,316	29.2	432	5.4
Total wages	$4,151,126	$2,723,702	65.6	$2,381,160	57.4	$1,695,035	71.2	$580,146	24.4	$105,979	4.4
Men, 16 years and over	4,364	2,843	65.1	2,295	52.6	1,497	65.2	670	29.2	128	5.6
Wages	$2,014,134	$1,299,595	64.5	$1,158,193	57.5	$822,201	71.0	$287,875	24.9	$48,117	4.1
Women, 16 years and over	9,542	7,001	73.4	5,601	58.7	3,674	65.6	1,625	29.0	302	5.4
Wages	$2,101,044	$1,415,156	67.4	$1,214,993	57.8	$868,422	71.5	$288,997	23.8	$57,574	4.7
Children, under 16 years	274	63	23.0	35	12.8	12	34.3	21	60.0	2	5.7
Wages	$35,948	$8,951	24.9	$7,974	22.2	$4,412	55.3	$3,274	41.1	$288	3.6
Miscellaneous expenses	$562,870	$341,486	60.7	$237,446	42.2	$153,275	64.6	$60,172	25.3	$23,999	10.1
Cost of materials used	$9,382,102	$6,328,036	67.4	$5,689,613	60.6	$3,900,897	68.5	$1,506,193	26.5	$282,523	5.0
Products:											
Total value	$16,721,234	$10,854,221	64.9	$9,548,603	57.1	$6,487,227	67.9	$2,576,048	27.0	$485,328	5.1
Gloves and mittens:											
Dozens of pairs	2,895,661	1,721,831	59.5	1,484,579	51.3	925,440	62.3	398,657	26.9	160,482	10.8
Value	$16,039,168	$10,507,789	65.5	$9,379,560	58.5	$6,850,809	67.7	$2,554,717	27.2	$474,034	5.1
All other products, value	$682,066	$346,432	50.8	$169,043	24.8	$136,418	80.7	$21,331	12.6	$11,294	6.7

Table 10 shows the extent to which the industry is local and peculiar to the state of New York, and especially to Fulton county. Of the total number of establishments in the leather glove and mitten industry, New York reported 243, or 63.8 per cent, with a capital of $6,219,647, or 69.1 per cent of the total capital. They employed 9,907 wage-earners, or 69.9 per cent of the total number. The cost of materials was $6,328,036, or 67.4 per cent, and the value of products $10,854,221, or 64.9 per cent, of the total for the United States. Of the total quantity of gloves and mittens reported, 1,721,831 dozens of pairs, or 59.5 per cent, were manufactured in New York. Table 10 also shows the degree to which the industry was centralized in Fulton county, and in Gloversville and Johnstown. Fulton county returned 166 establishments, or 43.6 per cent of the total number reported. Their capital was $5,517,850, or 61.3 per cent of the total, and the number of wage-earners constituted 55.9 per cent of the total number reported. This relatively large per cent of the total capital and the number of wage-earners reported for Fulton county as compared with the per cent of the total number of establishments, in a measure indicates that the larger glove and mitten factories are located in Fulton county. The value of products was $9,548,603, or 57.1 per cent of the total, and the quantity of gloves and mittens was 1,484,579 dozens of pairs, or 51.3 per cent of the total, valued at $9,379,560. Table 11 further indicates that over 60 per cent of the glove and mitten establishments of Fulton county were located in Gloversville. This localization of the industry is not due to economic conditions, such as low price of coal or to advantageous freight rates, but it may be attributed to the nature of the industry itself, and to the circumstances connected with its inception in the United States. As indicated in the historical sketch which follows, gloves and mittens were first manufactured in the United States in what is now Fulton county. As the industry became of commercial importance the number of families that depended upon it for a livelihood increased, until nearly every man, woman, and child in the surrounding country became proficient in the making of some special part of the glove or mitten. Foreign cutters coming to this country naturally settled in Fulton county. In this way the industry became localized, and contemporaneously came the development of the tanning industry and the establishment of factories engaged in making glove and mitten dies.

Nearly all the factories are owned or controlled by local men, most of whom have at some time been employed in other factories in the country, and who by thrift and industry have risen from the cutter's table

to the management or ownership of a factory. Naturally everything tends to make the industry local; the expert and skilled laborers in most cases own their own homes; the manufacturer is able to depend upon the farmers' families for a great deal of work, and is himself interested in the development of local enterprises.

There are, however, large numbers of leather gloves and mittens manufactured, not only outside of Fulton county, but also outside of New York. They were made in the early part of the century, and are still made, at Littleton and Plymouth, N. H. In 1900, as shown by Table 13, they were manufactured in 27 states, but, outside of Fulton county, N. Y., the product was mostly of the coarser and cheaper grades, as it is impossible to induce the expert labor to emigrate to another section of the country.

Table 11 shows the statistics of the leather glove and mitten industry for cities of over 20,000 population for 1900.

TABLE 11.—STATISTICS OF CITIES OF OVER 20,000 POPULATION: 1900.

CITIES.	Rank by value of products.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES.			
						Total.		Men, 16 years and over.	
				Number.	Salaries.	Average number.	Wages.	Average number.	Wages.
Total		124	$1,780,328	238	$195,411	3,317	$1,250,966	1,196	$609,350
Chicago, Ill	1	21	615,439	79	75,407	1,532	598,982	656	313,528
San Francisco, Cal	2	15	297,650	50	40,392	400	158,304	129	72,184
New York, N. Y	3	34	245,410	27	24,780	483	191,851	104	74,021
Milwaukee, Wis	4	6	85,423	3	2,299	124	43,429	53	23,649
Boston, Mass	5	5	71,000	4	1,500	138	63,126	47	34,163
Buffalo, N. Y	6	4	63,666	19	12,898	54	18,844	25	10,820
Syracuse, N. Y	7	5	19,203	3	1,275	31	9,179	11	3,889
Binghamton, N. Y	8	3	12,926	.....	.....	20	6,637	10	3,351
Minneapolis, Minn	9	4	8,855	.....	.....	10	2,210	1	570
All other cities[1]	.....	27	365,756	53	36,860	525	158,404	159	73,175

CITIES.	AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES.				Miscellaneous expenses.	Cost of materials used	PRODUCTS.			
	Women, 16 years and over.		Children, under 16 years.				Total value.	Gloves and mittens.		All other products, value.
	Average number.	Wages.	Average number.	Wages.				Dozens of pairs.	Value.	
Total	1,997	$624,193	125	$17,428	$163,213	$2,326,206	$4,761,203	942,615	$4,553,232	$207,971
Chicago, Ill	795	274,430	81	11,024	59,518	1,074,569	2,209,529	554,360	2,207,279	2,250
San Francisco, Cal	262	84,820	9	1,300	35,865	319,226	664,131	88,428	634,371	29,760
New York, N. Y	378	117,655	1	175	38,189	235,998	586,061	46,595	417,143	168,918
Milwaukee, Wis	65	19,006	6	774	3,062	178,774	252,182	60,660	251,532	650
Boston, Mass	91	28,963	.....	.....	5,142	101,390	230,262	25,553	230,262	.....
Buffalo, N. Y	28	7,934	1	90	2,336	55,126	106,000	17,600	106,000	.....
Syracuse, N. Y	20	5,290	.....	.....	3,340	32,958	56,437	14,953	55,957	480
Binghamton, N. Y	10	3,286	.....	.....	253	24,046	36,263	11,615	36,263	.....
Minneapolis, Minn	8	1,560	1	80	768	3,937	9,628	1,822	9,378	250
All other cities[1]	340	81,249	26	3,980	14,740	300,182	610,710	121,029	605,047	5,663

[1] Includes establishments distributed as follows: Oakland, Cal., 1; San Jose, Cal., 2; Denver, Colo., 1; Rockford, Ill., 1; Fort Wayne, Ind., 2; Des Moines, Iowa, 1; Salem, Mass., 1; Detroit, Mich., 2; Kalamazoo, Mich., 1; St. Louis, Mo., 1; Omaha, Nebr., 1; Jersey City, N. J., 2; West Hoboken, N. J., 1; Auburn, N. Y., 1; Elmira, N. Y., 1; Kingston, N. Y., 2; Rochester, N. Y., 2; Cincinnati, Ohio, 1; Portland, Oreg., 2; Seattle, Wash., 1.

Table 11 indicates the extent to which the industry was carried on in large cities in 1900. The 124 establishments in these cities constituted 57.7 per cent of all the establishments outside of Fulton county. The capital invested was $1,780,328, or 51.1 per cent; the number of wage-earners 3,317, or 53.1 per cent; and the value of products $4,761,203, or 66.4 per cent. The number of gloves and mittens manufactured was 942,615 dozens, valued at $4,553,232, or 66.8 per cent. Chicago led the cities of over 20,000 population in value of products as well as in the number of dozen pairs of gloves and mittens manufactured, although New York city led in number of establishments. Chicago reported 554,360 dozen pairs of gloves and mittens, valued at $2,207,279, or 58.8 per cent of the total quantity and 48.5 per cent of the total value for the cities. San Francisco followed Chicago, both in quantity and value of products, and New York city ranked third. Milwaukee was next to New York in value of products, but exceeded it in the number of dozen pairs. This is due to the fact that a large amount was reported as the value of custom work and repairing in New York. Boston ranked fifth in both value of products and number of dozens. The totals of the remaining cities formed a comparatively small per cent of the totals for the cities. This rapid growth of the industry is due to improvements that have been made during the past twenty years. As already stated, the first mittens manufactured in the United States were used for the protection of the hands during the harvest. Later on, coarse gloves were made

for laborers who, from the nature of their employment, were exposed to the inclemency of the weather. Gradually the manufacture became diversified and manufacturers began to improve upon the quality and to turn their attention to gloves for street wear. It was subsequent to 1880, however, that the attempt was made to manufacture fine gloves. As the quality improved the demand increased, resulting in the establishment of new factories. At the present time the development of the industry in the United States has reached a point where the manufacturer is able to reproduce the best points of all the foreign makes and to combine them with his own. In men's fine gloves he can produce an article that is equal if not superior to any foreign manufacture. The American glove is more durable, is better made, and fits more satisfactorily. This great advance has been accomplished mainly by the improved facilities for tanning, coloring, and finishing, and the expert knowledge of the glove makers and leather dressers, who have come to this country in great numbers from all of the glove-producing countries of Europe.

Table 12 shows the value of gloves of kid and other leather imported each year, 1890 to 1900, inclusive, and from what countries imported, according to the reports of the bureau of statistics of the Treasury Department.

Table 12 indicates that the importations of gloves and mittens have not increased to any great extent during the decade; in fact, during 1898 and 1899, the value of

TABLE 12.—VALUE OF GLOVES, OF KID OR OTHER LEATHER, IMPORTED FROM 1890 TO 1900, INCLUSIVE.

COUNTRIES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890
Total	$6,107,765	$5,898,125	$5,384,168	$6,486,813	$6,763,082	$6,463,872	$4,412,597	$6,925,876	$5,830,380	$5,627,964	$5,501,336
EUROPE.											
Austria-Hungary	124,616	198,921	298,421	600,763	866,421	111,264	169,977	239,863	97,572	161,634	170,581
Belgium	275,340	264,186	286,287	372,096	410,608	458,654	267,142	357,025	208,582	400,924	361,791
Denmark	1,891	1,626	24	466	15	488	16	18	15	32	220
France	2,260,697	2,064,603	1,625,276	2,271,669	2,499,644	2,621,224	1,702,981	3,201,407	2,806,821	2,465,442	2,848,375
Germany	2,785,103	2,347,827	2,683,924	2,610,175	2,894,465	2,768,978	1,826,623	2,565,011	2,217,809	2,117,012	2,077,917
Gibraltar										7	
Italy	223,241	150,274	170,120	211,106	187,058	217,482	150,068	176,171	181,472	252,581	285,870
Netherlands	98		4	55	2,473	102	7,567	36,338	58,398	10	65
Russia—Baltic and White seas							65				
Spain						38					18
Sweden and Norway	14,886	7,888	9,048	6,390	6,248	3,864	1,468	5,168	1,679	1,783	734
Switzerland	7,990	1,454	1,622	6,492	1,017	6			12	3,157	187
Turkey in Europe											9
United Kingdom	413,622	360,750	309,036	407,416	390,948	281,256	286,612	344,694	262,818	222,149	254,713
NORTH AMERICA.											
Bermuda								6			
Dominion of Canada:											
Nova Scotia, New Brunswick, etc	245	143	76	81	19				2	2,908	122
Quebec, Ontario, Manitoba, etc	125	82	302	94	880	419	57	151	70	288	488
British Columbia	350	108	19	3	11	43	6	10	6	2	135
Newfoundland and Labrador			1			1					
Mexico	106	11	7	7	93	53	12	14	123	27	116
West Indies:											
British		1								8	
Cuba	5										
Danish		256									
French					3,156						
SOUTH AMERICA.											
Argentina			6								
ASIA.											
Chinese Empire			29								
Japan			9		7				1		
Turkey in Asia					19		3				
OCEANIA.											
British Australasia			7								

imports of gloves was less than the amount reported for 1890, 1891, or 1892. The increase from 1890 to 1900 is insignificant compared with the increase in the output of domestic factories. France and Germany have always been the largest exporters of gloves and mittens to the United States. In 1900 the value of the imports from these two countries amounted to $5,045,800, or 82.6 per cent of the total. The United Kingdom followed, with $413,622; Belgium was fourth, with $275,340; and Italy fifth, with $223,241. The imports from the remaining countries, with the exception of those from Austria-Hungary, amounting to $124,616, were insignificant. The imports were almost exclusively of the finer grade of gloves and, presumably, the greater per cent represented ladies' fine gloves.

The manufacture of ladies' fine gloves has not yet been attempted to any considerable extent in the United States. This is due to the fact that thus far glove manufacturers here have been unable to secure the finest grade of skins; the foreign manufacturers seem to have the monopoly of these, only the inferior grades being exported to this country. In the course of time, however, through competition and an increased local demand, it may be expected that the manufacturer in

the United States will be able to obtain as good a grade of skins as his European rival. Also, owing to the low wages paid in foreign countries, the manufacturer in this country can not yet compete with the foreign producer in these finer grades. Moreover, the character of the labor is another factor favoring the foreign manufacturer. The making of the best gloves not only requires expert skill and knowledge, but also extreme patience, as the finest work must be slowly executed. The economic conditions are so different in foreign countries, wages are so low, and employment so difficult to secure, that the glove makers, in order to retain their employment, are obliged to do exceedingly careful and painstaking work, which means that they are able to accomplish only a comparatively small amount of work a day. In the United States, on the other hand, the glove maker is accustomed to better living, better clothes, and more amusement than his European coworker, and, of necessity, he must receive higher wages. Accordingly he prefers to make the cheaper grade of gloves, as he can cut and make more during the day than if he were employed on the finer grades. All of these factors combine to seriously handicap the manufacturer in the United States. It is probable, however, that the ingenuity of inventors will bring to perfection labor-saving machines, which will result in producing artistic work surpassing the best possible handwork. At any rate, the glove manufacturers of the United States will not be satisfied until they furnish every pair of gloves and mittens worn by the people of this country.

From the inception of the United States Patent Office to January 1, 1902, in connection with the manufacture of gloves and mittens there have been issued 340 patents, classified as follows:

Glove fastenings	54
Glove-sewing machines	46
Gloves	179
Mittens	61
Total	340

Probably the most notable of the glove-making machines is the multiple-needle machine, for stitching the back of gloves, which sews two, three, four, and even six rows at the same time. The automatic trimmer, which is attached to the head or needle bar of the machine, was introduced in 1893, and has greatly facilitated the making of outseam gloves, and it also trims the leather much better than do shears. Among the other machines which have given satisfaction are the ornamental stitch, the zigzag stitch, and the overstitch, the latter being used to close the edges of the seam from the outside.

HISTORICAL AND DESCRIPTIVE.

At various periods and in different countries the glove has been the theme for many fanciful and poetic theories. It has been a customary offering on occasions of joy and sorrow; the pledge of friendship, of love, and of safety; the symbol of hatred and defiance, of humiliation and honor; the token of loyalty, and the tenure by which estates have been granted and held.

The origin of the glove is unknown, and its material history is not aided to any extent by the history of the word itself. It is evident, however, that the farther back the word can be traced, the longer must gloves have been in existence; and while the etymologists invariably reach different conclusions regarding the origin of the word, their careful researches have demonstrated that the antiquity of the glove is certainly remote. From all evidence that is obtainable, it probably constituted a part of man's dress from time immemorial. If recent discoveries in the geological world are to be credited, it formed a part of the costume of the prehistoric cave dwellers. It is supposed that the gloves of the cave dwellers were made from roughly dressed skins and sewed with needles made of bone, and were not of ordinary size, but reached to the elbows, thus anticipating the multi-button glove of the Victorian era.[1] They were known to the Greeks and also to the Persians and Romans. Among the Greeks they were chiefly used by the laborers as a protection for the hands in gathering harvests. Among the Persians and Romans they were also worn as ornaments, chiefly by the higher orders, particularly the clergy and military.

It is more than likely that they were always worn by the northern people of Europe for protection from the inclemency of the weather, as the early history and the literature of the Anglo-Saxon race contain references to their use. But with the English, as with other nations of Europe during the dark ages, their use was confined to and formed a part of the regalia of kings, princes, and other attendants on royal occasions. That great importance was paid to their quality even during this period may be inferred from an old proverb, "For a glove to be good, three nations must contribute to it: Spain to dress the leather, France to cut it, and England to sew it."[2]

During the Eighth and Ninth centuries it was an article of much importance, but was largely confined to the higher orders, the royalty, military, and clergy. Charlemagne, about the year 790, granted the abbot and monks of Sithin the unlimited right of hunting, so that they could make their gloves and girdles and

[1] Gloves, Their Annals and Associations, by S. William Beck, page 13.

[2] The History of the Glove Trade by William Hull, jr., page 11.

covers for their books from the skins of the deer they might kill. For centuries the glove continued to be an essential adjunct to the regalia of royalty. It was worn at the coronation of kings and at their funeral ceremonies. The church, in its efforts to teach principles and truth by sight, endowed gloves with hidden significance, and in this way they played an important part in ecclesiastical rites and ceremonies. They were a part of the dress worn at the consecration of bishops, and were placed on their hands at burial, and in the Fourteenth century the inferior clergy and attendants also were allowed to wear them at religious ceremonies. Their use and elegance, however, became so extravagant that the church was compelled to pass sumptuary restrictions regarding them. It is stated that they were not generally worn by women until about the period of the Reformation.

During the middle ages gloves were in general use among those vested with authority, possessing special significance when worn by justices. Another peculiar and interesting use of gloves, which to some extent gives proof of their antiquity, was in hawking. This sport had its origin about the Fourth century, and it may safely be inferred that the wearing of gloves was coeval with it, since some covering would seem to be necessary to protect the hands from the sharp talons of the hawk. They were also used in archery.

The Germans were probably the first people to adopt the custom of wearing gloves to any considerable extent, and their manufacture was introduced into Germany by French refugees from Grenoble. The gloves worn by ladies were of fine material and workmanship, and were usually adorned on the back with a number of stones or jewels. Those worn by the men had a thumb stall, but left the fingers free as do mittens; in workmanship and material they were not as fine as the gloves worn by ladies.

In England they were introduced as ornaments by the Normans after the conquest, and were then made quite long, reaching to the elbows, and ornamented at the top with embroidery. Their use was at that time confined to men, but in the Fourteenth century they were adopted to some extent by ladies of rank. At the time of John they were not a part of the dress of the commonalty, and were worn only by the higher classes. The cheverill gloves were in common use in the Sixteenth century. "Cheverill" is derived from the French chèvre, or goat. The skin of the goat, on account of its pliability, made better gloves than the skins which had been used before that time. In 1550 or thereabouts the use of gloves was common to all classes and conditions of men. Those worn by the higher classes during the Sixteenth century have been well described, as follows:

> The magnificent embroidery on the cuff of the glove can hardly be done justice to in description. Every flower, the columbine and pink in particular, the butterflies, and even a little goldfinch in the middle of the cuff, are rendered in natural colors with an exquisite fidelity, and with such skill as to make them veritable needle paintings, in which, too, the needle well holds its own against the brush. The work is done in fine silk and the shading is eloquent of the skill of early dyers, for the range of colors admitting of such indefinable gradations must have been very extensive. * * * The glove is nearly 13 inches in total length. The whole cuff, 4½ inches in depth, is lined with crimson silk, and the side bands of cloth-of-gold ribbon, edged with gold fringe, were probably attached to the glove to confine the wide sleeves, and allow the ornamentation of the gauntlets unhindered admiration.[1]

Gloves for ordinary everyday wear were made of substantial leather and were not altogether destitute of ornament. More elaborate gloves were made of tan-colored doeskin, with a white kid lining, and with red silk turned up over the edge in the cuff. During the Stuart period in England, according to the dictates of fashion, the sleeves gradually became shorter, and as the sleeve receded the glove advanced in length. The varieties worn by the gay cavaliers were usually made of white leather and overloaded with ornaments. Lace was freely used at this period, and a glove which became very fashionable during the first half of the Eighteenth century, was made with broad black lace ruffles and heavy fringe. From this time on it receded in length and became more and more simple in construction and more and more immaculate in fit.

The industry owes much of its importance to a society of handcraftsmen known as "glovers." They were organized in France as early as 1190, and in Scotland the glovers of Perth were incorporated in 1165. This society not only promoted the growth of the trade, but contributed largely to improvements in the construction and material of the glove. It took upon itself the task of insuring honesty in workmanship and of aiding in the regulation of the trade. As early as the Fifteenth century these "glovers" secured the enactment of laws favorable to the glove trade in their respective countries. In the early part of the Seventeenth century a company of glovers was organized in London, and from that time this city has been a center of the glove industry. In Ireland the manufacture of gloves was formerly very extensive, Limerick, Cork, and Dublin having thousands of people employed in this occupation. The "Limerick" glove was of most exquisite texture and was manufactured principally from the skin of the very young calf, lamb, or kid. So delicate was the material that it is said that one of these gloves could be placed within a walnut shell. The industry, after enjoying a very prosperous era, declined and is now of no importance. Gloves have been manufactured in France for many centuries, Paris, Grenoble, Nicot, and Montpelier each having an extensive trade. Following the example of England, protection was afforded to the home manufacture by the enactment of favorable laws. The industry in France has always

[1] Gloves, Their Annals and Associations, by S. William Beck, page 121.

been very prosperous, and that country is to-day among the foremost of nations in the production of gloves. This success has resulted largely, perhaps, from persistent efforts to secure excellence in material and workmanship.

The manufacture of gloves and mittens in the United States dates from about the year 1760, when Sir William Johnson, chief agent of King George with the North American Indians, brought over from Scotland many families as settlers on his grants. Several families came from Perthshire and settled in the eastern part of what is now Fulton county, N. Y., calling the town Perth. Many of these settlers had been glove makers and members of the glove guild in Scotland, and brought with them glove patterns and the proper needles and threads for glove making. The first gloves and mittens were used chiefly by the farmers and woodchoppers as a protection for the hands while engaged in the rough and laborious work incident to their occupation. The entire output of the industry for many years was probably disposed of in the immediate vicinity. It was not until about 1809 that gloves were manufactured for more distant markets, and it is stated that Talmadge Edwards, a storekeeper of Johnstown, N. Y., was the pioneer in the manufacture of gloves in commercial quantities. Mr. Edwards took a bag of them on horseback to Albany when making a trip for the purpose of renewing his stock of merchandise. Finding a good demand for these articles, he had leather dressed in quantities, and secured farmers' girls to come to his factory to cut gloves, which were then sent out to farmers' wives to be sewed. In this manner the glove and mitten industry of the United States was established.[1] During the incipient stages of this industry the goods produced were really mittens, and not gloves. A glove, as distinguished from a mitten, is a covering for the hand in which each finger is separately inclosed, the part above the hand varying in length according to fashion or convenience. About the year 1810 a glove manufacturer, who had been associated with Mr. Edwards, sold a part of his output by the dozen, and this is said to be the first instance in which they were sold by the quantity. The local demand continued to increase, and each year some enterprising manufacturer would venture to make an extended trip to dispose of his product. In 1825 Elisha Johnson, of Gloversville, N. Y., went to Boston with a load of gloves in a lumber wagon, making the journey in six weeks. This is said to have been the longest trip that had been made in connection with the industry up to that time, and the results were highly gratifying to those interested.[2]

The early process of glove making differed from modern methods. In the first place, a skin was put on a table, and a pattern cut from pasteboard or a shingle and having spaces between the fingers wide enough to admit a flat pencil, was placed on the skin. The gloves were then marked out or traced with sharp pointed pieces of lead, commonly called "plummets" (which were often made by pouring melted lead into a crack in the kitchen floor), and then cut out with shears. They were then matched with fourchettes and thumb pieces, and tied with a buckskin string in lots of a dozen pairs, with thread, needles, and silk, and a handful of scraps for weltings. The cutting was usually done by men, the sewing or making by women. In the early days the manufacturer did not have his gloves and mittens sewn in his factory, but gave them out to the country people, who came to him from miles around and took the gloves home with them in bags. A small skein of silk was put in with the better class of goods, to be used in working a vine on the back of the glove as its only ornament. The maker threaded a square pointed needle with heavy linen thread, double tied a knot in the end, waxed it, placed a strip of buckskin between the edges as a welt, and sewed up the seams. The lighter gloves had no welt, but were backstitched, and it was possible for an expert to make a neat, close-fitting glove. The welted gloves, if well made, gave very satisfactory service. As each glove was completed it was placed between folds of pasteboard and the maker sat on it while engaged in sewing the next glove. This "patent pressing process," as it was jocularly called, partially served the purpose of the modern "laying-off" table, as it straightened out the glove and had a tendency to make it soft and flexible.

After a time dies of clumsy construction and wooden mauls were introduced to take the place of shears. These became of great service, and their construction has been greatly simplified. They are now in constant use. At first two sets were used—one for cutting the leather to size and one for cutting to shape. These were soon abandoned, however, as unprofitable, their use necessitating the waste of large quantities of leather. For a time a right and left die were used, but it was soon found that the same results could be obtained with one die by turning the skin.

The introduction and development of the sewing machine has been an important factor in the development of the glove industry. It was first used in 1852. The first machines were large, crude, cumbersome, and difficult to operate, both needle bar and shuttle being driven by cogwheels. They were used only in stitching the thin binding on the tops of gloves and mittens. In 1854 a machine was introduced to stitch the laps and bindings. In this branch of the business the sewing machine entirely superseded hand work. In 1856 a machine was introduced to make some grades of light goods throughout.

Although the wax thread was used in 1858, its use was not general until after the Civil War. Thousands

[1] M. S. Northrup, ex-secretary American Glove Association.

[2] History of Fulton County, N. Y., by Washington Frothingham, page 157.

of sewing machines are now in use in this industry, not only of American, but also of French and German make. A number of machines are used for special purposes, as for silking and palming, and making the prick and pique and other seams.

The industry received a decided stimulus during the Civil War, as large quantities of gloves, especially gauntlets, were required for military service. Both gloves and skins shared in the general rise of prices which took place during this period. Steam power was introduced for running sewing machines in 1875, and since that time the direct factory output has greatly increased. The variety of material used in glove making is limited, the most common material being leather. Many varieties of skins are now used which for a long time were thought valueless. In the infancy of the industry in the United States, deer were abundant and their skins were the chief material used. The deerskin glove, although necessarily crude, gave excellent protection to the hands. As the demands of the trade grew, the home product of deerskins became insufficient, and sheepskins were pressed into use. This leather, however, was not very suitable for glove making, being weak and pulpy, and as no process of tanning was as yet perfected to render the leather durable in all weather, deerskins began to be imported. At the present time, however, as indicated by Table 8, sheep and lamb skins, both domestic and imported, are more extensively used in the manufacture of gloves and mittens than any other skin, as, by means of the various processes of tanning and coloring, these skins can be made into different grades and qualities of leather. The domestic skins come principally from Chicago and St. Louis. The imported skins are received under the name of "fleshers," a term signifying that the skins have been split, and the flesh side, after the removal of the grain, is used for bindings.[1] Modern methods in tanning have brought into use for glove making many new kinds of leather. Buckskin in its various forms is the best material for heavy gloves, but this variety is also made of cowhide and horsehide. The finer gloves for street wear are made from the skins of the goat, kid, lamb, antelope, calf, colt, Arabian sheep, South American kid, chamois, and reindeer. Most of these skins are imported in the raw state and dressed in American tanneries. Deerskins are supplied by Mexico, Central and South America, and by all parts of the United States in which they can be found. The celebrated "Jacks," a variety of the Para deerskins, come from the country around the mouth of the Amazon.

The skin of the Mocha, a variety of sheep, native of Arabia, Abyssinia, and the region around the headwaters of the Nile, is at present much used in the manufacture of fine gloves, and it is interesting to note the origin of this branch of the glove industry. In 1868 one of the large glove manufacturers of Johnstown, N. Y., engaged in the manufacture of castor gloves, mostly from vat-liquor-dressed antelope skins. After the extermination of the buffalo, the supply of antelope skins was also greatly diminished, and experiments were made with various other light skins in order to find a suitable substitute. In 1877 two bales of skins of unknown variety were found with a shipment of Mocha coffee shipped to Boston, Mass., from Hodeidah, a port on the Arabian side of the Red Sea. They appeared to be haired sheepskins and were sent to be dressed, and as they dressed out well, a Boston house was induced to import more. Two years later, a New York importer sent an agent to Aden, in southern Arabia, to collect these sheep. The name Mocha came from the fact that the first bales came with Mocha coffee, and as this name seemed as appropriate as any, it has continued to be used.

The skins of which gloves are made are put through an exhaustive variety of processes. In the early days of the industry the manufacturers dressed their own leather, and many of the larger manufacturers still continue this practice, as it allows them to produce the grade and quality desired. In general, however, the tanning and dressing of skins is a distinct and separate industry.

During the early period of the industry the Indian process of tanning was exclusively employed. The distinguishing feature of this process was the use of the brain of the deer, which insured a durable as well as a soft and pliable leather. Somewhat later an attempt was made to substitute the brain of the hog, but the results were not entirely satisfactory, as it lacked certain essential properties possessed by the deer brain. At the present time the sheep and lamb skins used are received in what is termed "salt pickle," which is applied to the skin after the removal of the hair. As soon as received they are thoroughly washed, to remove the salt and to extract the pickle, after which they remain in an alum bath for nearly twelve hours. They are then staked, a process which involves the stretching or the drawing of the skin over a thin round-face iron attached to a piece of wood about the height of a man's knee. This is done partly by the hand and partly by the knee of the operator. The process is generally termed "knee staking," in contradistinction to a similar process known as "arm staking," to which the leather is subjected after reaching the glove factory. The skins are then dried in the open air or in artificial dry rooms, the temperature of which is regulated according to the nature of the skin, and the time required to dry it, after which they are again carefully washed, staked, and dried.

As a rule, the skins are next sorted according to size and quality, and are then submerged in an egg bath

[1] History of Fulton County, page 165.

consisting of a preparation of 10 parts of salt with 90 parts of egg yolk. By revolving the skins in a drum the egg yolk is thoroughly absorbed, and the leather becomes soft and pliable. They are next colored, by placing them flesh side down on zinc or lead tables, and applying the color with a brush. After the color is set and the skins are thoroughly dried they are dampened, rolled up in bundles, flesh side out, and stored away to season for a varying length of time.[1] The milling of oil-dressed skins involves a somewhat different process. After the skins are soaked in vats from three days for water frizzing to four weeks for lime frizzing, they are scraped by the beam workers to remove the grain, then dried into parchment, soaked in water, and milled in oil. They are again placed on the beam and scoured of oil and natural grease through the agency of soda ash, being repeatedly dried during these various processes, after which they are subjected to the braking machine, and then staked with a blunt tool, which renders them pliable. They are next put on the "buck-tail," or emery wheel, and cut down for a face, and then returned to the water for a clean scouring, wrung out and dried, spread upon the grass for the night dew to bleach, and again staked, finished, and smoked or colored, after which they are ready for the glove maker.[2]

As soon as the skin is received by the glove maker it is immediately staked by the hand stake, which consists of two upright and two horizontal bars, one of the latter being movable to admit the skin, which is held in position by a wedge inserted at the end of the bar. The stretching is then done by pressing over the skin so placed, a blunt iron, like a spade, having round corners and a handle which fits under the arm. The oil-dressed skins are then split even in a belt-splitting machine, and the kid skins are shaved either by "mooning" or by placing them on a marble slab with the flesh side up, and shaving the surface with a broad chisel or so-called dowling knife. By this process the skin is reduced to the desired thinness, and the inequalities of the flesh side are removed. "Mooning" is done with a round steel shaped like a plate and having the center cut out and a handle placed across the opening; the skin is then hung on an elastic pole and the moon-shaped knife is drawn over the flesh until the desired result is secured. The skin is then ready to go to the cutters, of which there are two classes, the block and the table cutter, each class, as a rule, having separate rooms. The block cutters, most of whom are of American parentage, are engaged in cutting the cheaper and coarser grade of gloves.

The skin is placed on a block made of hard-wood planks placed on end and bolted together, and the die of the required shape and style is placed carefully on the skin and given a blow with the maul. In the table cutters' room tables instead of blocks are used. The skin is dampened, then stretched over the end of the table until it will stretch no more, and then cut off the length of the glove; next stretched to width and cut off, after which the fingers and opening are put in with the die and press.

A table-cut glove, inasmuch as it is more elastic and will conform to the shape of the hands, will give a much better fit than a glove cut on the block.[3] In the cheaper and heavier grades, however, a perfect fit is not absolutely essential. The table cutters in the glove and mitten factories of the United States are of many nationalities, including French, English, German, Swedish, and, in fact, they include representatives of every country in which gloves are manufactured. The foreign cutters are, so to speak, born in the glove industry, as for generations their families and relatives have obtained a livelihood by cutting gloves. To be a good table cutter requires an apprenticeship of at least three years, and even after this period not more than one out of three can be considered an excellent workman. The fingers of the cutter must possess the habit and nimbleness which can only be acquired by long practice. He must make a careful examination of each skin and so shape it that he may get the greatest number of pairs of gloves and yet avoid the flaws. In the cutting of Mocha leather, young men who have served apprenticeship in this country have proven to be equal to the best cutters from Europe. From the cutters' room the leather, which has assumed the shape of the glove, is sent to the "silkers," who embroider the back, and then to the "makers." Some make the gloves, that is, they sew the fingers and put the thumbs in; others, called "welters," are engaged in welting or hemming the glove around the edge at the wrist; still others, called "pointers," work the ornamental lines on the back.

After the glove has reached this stage of completion, the fourchettes and the thumb are put in place; the back is then embroidered and the end of the silk is pulled out and tied, and the glove closed by beginning either at the upper end of the long seam and sewing toward the little finger, or at the end of the index finger and finishing with the long seam. The glove is now ready to be bound, hemmed, or banded, the buttonhole made, or the lacings or fastener adjusted. Each maker has his particular part of the work to do, and before a glove is finished it must pass through a number of hands. After the gloves are made they are drawn over metal hands heated by steam, a "laying-off" process, as it is termed, and by means of which the glove is shaped and given its finished appearance. The gloves are now ready for inspection, and are assorted according to grades and sizes, and finally forwarded to the stock room, ready for shipment.

Table 13 shows the detailed statistics, by states and territories, for the industry as returned for 1900.

[1] History of Fulton County, pages 167 and 170.
[2] M. S. Northrup, ex-secretary American Glove Association.
[3] Glove Trade Directory, O. H. Bame, publisher.

TABLE 13.—GLOVES AND MITTENS, LEATHER,

		United States.	California.	Illinois.	Indiana.	Iowa.	Maryland.	Massachusetts.
1	Number of establishments	381	23	24	3	6	3	8
	Character of organization—							
2	Individual	222	15	8	1	1	2	3
3	Firm and limited partnership	125	7	6	1	3	1	3
4	Incorporated company	33	1	10	1	2	.....	2
5	Miscellaneous	1	.....	.....	.....	.....	.....	.....
	Capital:							
6	Total	$9,004,427	$432,996	$781,719	$148,994	$266,708	$50,541	$109,150
7	Land	$286,287	$4,010	$55,250	$9,000	$22,000	$100	$1,000
8	Buildings	$582,095	$7,250	$81,938	$26,000	$35,000	$500	$5,000
9	Machinery, tools, and implements	$675,650	$32,820	$98,333	$12,453	$20,700	$5,434	$10,615
10	Cash and sundries	$7,460,445	$388,916	$546,198	$101,541	$189,008	$44,507	$92,535
11	Proprietors and firm members	508	30	22	4	13	5	9
	Salaried officials, clerks, etc.:							
12	Total number	637	65	108	7	42	8	7
13	Total salaries	$544,170	$52,962	$93,782	$10,300	$30,948	$6,175	$3,960
	Officers of corporations—							
14	Number	35	4	18	2	.....	.....	.....
15	Salaries	$52,635	$3,120	$26,040	$4,500	.....	.....	.....
	General superintendents, managers, clerks, and salesmen—							
16	Total number	602	61	90	5	42	8	7
17	Total salaries	$491,535	$49,842	$67,742	$5,800	$30,948	$6,175	$3,960
	Men—							
18	Number	513	51	74	5	33	8	4
19	Salaries	$451,700	$46,090	$59,764	$5,800	$26,670	$6,175	$2,760
	Women—							
20	Number	89	10	16	.....	9	.....	3
21	Salaries	$39,885	$3,752	$7,978	.....	$4,278	.....	$1,200
	Wage-earners, including pieceworkers, and total wages:							
22	Greatest number employed at any one time during the year.	17,441	693	2,032	245	215	89	229
23	Least number employed at any one time during the year.	11,739	563	1,478	169	117	89	147
24	Average number	14,180	622	1,752	226	152	89	194
25	Wages	$4,161,126	$224,953	$653,237	$49,627	$53,348	$14,276	$85,410
	Men, 16 years and over—							
26	Average number	4,364	176	741	40	47	23	61
27	Wages	$2,014,184	$94,924	$342,478	$18,047	$28,110	$5,300	$42,913
	Women, 16 years and over—							
28	Average number	9,542	422	920	163	98	63	127
29	Wages	$2,101,044	$126,729	$298,930	$28,172	$24,788	$8,751	$41,597
	Children, under 16 years—							
30	Average number	274	24	91	23	7	3	6
31	Wages	$35,948	$3,300	$11,829	$3,408	$450	$225	$900
	Average number of wage-earners, including piece-workers, employed during each month:							
	Men, 16 years and over—							
32	January	4,179	171	677	40	52	23	55
33	February	4,359	168	691	39	49	23	56
34	March	4,405	171	711	42	49	23	64
35	April	4,600	176	761	43	50	23	62
36	May	4,625	175	773	45	50	23	59
37	June	4,360	170	746	45	44	23	62
38	July	4,293	167	762	44	43	23	59
39	August	4,394	179	785	34	43	23	57
40	September	4,419	181	786	31	45	23	68
41	October	4,426	182	767	40	43	23	64
42	November	4,321	183	743	42	46	23	67
43	December	3,981	195	697	43	52	23	67
	Women, 16 years and over—							
44	January	8,882	414	816	171	81	63	103
45	February	9,234	410	831	165	84	63	111
46	March	9,698	413	892	174	90	63	131
47	April	9,858	417	952	168	91	63	132
48	May	9,947	416	981	164	95	63	130
49	June	9,680	411	973	168	74	63	131
50	July	9,448	414	963	175	123	63	119
51	August	9,771	426	934	151	123	63	121
52	September	9,825	430	951	149	123	63	139
53	October	9,905	439	946	165	123	63	140
54	November	9,738	440	968	158	98	63	137
55	December	8,524	437	828	146	72	63	133
	Children, under 16 years—							
56	January	241	24	77	24	2	3	6
57	February	243	24	77	24	5	3	6
58	March	266	24	83	24	5	3	6
59	April	279	24	92	24	5	3	6
60	May	286	24	99	24	5	3	6
61	June	288	24	101	24	5	3	6
62	July	295	24	105	24	10	3	6
63	August	300	24	106	19	10	3	6
64	September	280	24	90	19	10	3	6
65	October	288	24	86	24	10	3	6
66	November	272	24	90	23	10	3	6
67	December	261	24	80	24	10	3	6
	Miscellaneous expenses:							
68	Total	$562,870	$68,189	$69,432	$12,456	$14,611	$3,936	$6,938
69	Rent of works	$85,888	$15,500	$8,310	$120	$1,354	$850	$3,690
70	Taxes, not including internal revenue	$23,466	$1,845	$3,723	$808	$1,057	$225	$476
71	Rent of offices, insurance, interest, and all sundry expenses not hitherto included.	$359,721	$50,644	$57,274	$11,528	$12,150	$2,861	$1,772
72	Contract work	$93,795	$200	$125	.....	$50	.....	$1,000
	Materials used:							
73	Aggregate cost	$9,382,102	$436,512	$1,224,339	$173,195	$118,963	$54,098	$123,135
	Hides and skins—							
74	Total number of dozens	826,416	28,407	128,437	15,087	9,741	3,803	11,785
75	Total cost	$7,356,433	$372,136	$1,076,922	$157,263	$79,414	$41,630	$102,845
	Deerskins—							
76	Dozen	89,596	9,211	670	.....	375	100	266
77	Cost	$1,146,808	$154,596	$12,844	.....	$4,284	$700	$4,000
	Mochas—Arabian sheepskins—							
78	Dozen	105,372	332	75	.....	700	.....	6,345
79	Cost	$1,071,636	$4,000	$565	.....	$7,550	.....	$68,000

BY STATES AND TERRITORIES: 1900.

Michigan.	Minnesota.	New Hampshire.	New Jersey.[1]	New York.[1]	Ohio.[1]	Pennsylvania.	Virginia.	Washington.	Wisconsin.	All other states.[2]	
5	8	6	5	243	5	4	3	3	19	13	1
5	5	5	3	148	3	2	2	2	10	7	2
.....	3	.....	2	88	.....	2	1	.....	5	3	3
.....	.....	1	.....	7	2	.....	.....	1	4	2	4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5
$29,241	$13,487	$351,492	$65,894	$6,219,647	$113,791	$28,950	$136,300	$8,250	$219,789	$27,528	6
.....	.....	$21,200	$6,500	$150,677	$900	$500	$7,800	.....	$6,250	$1,050	7
.....	.....	$33,200	$9,600	$331,820	$1,700	$4,500	$29,100	.....	$14,937	$1,550	8
$2,180	$3,158	$25,975	$7,100	$345,902	$63,550	$4,650	$8,400	$1,700	$26,090	$6,590	9
$27,061	$10,279	$271,117	$42,694	$5,391,248	$47,641	$19,300	$91,000	$6,550	$172,512	$13,388	10
5	11	5	9	344	3	6	4	2	23	13	11
3	2	7	.....	328	3	3	23	3	24	4	12
$700	$550	$9,150	.....	$294,574	$3,600	$1,800	$13,700	$720	$17,939	$3,310	13
.....	.....	1	.....	5	2	.....	.....	.....	3	.....	14
.....	.....	$2,000	.....	$13 000	$1,200	.....	.....	.....	$2,775	.....	15
3	2	6	.....	323	1	3	23	3	21	4	16
$700	$550	$7,150	.....	$281,574	$2,400	$1,800	$13,700	$720	$15,164	$3,310	17
3	2	6	.....	277	1	3	19	3	20	4	18
$700	$550	$7,150	.....	$260,771	$2,400	$1,800	$12,500	$720	$14,540	$3,310	19
.....	.....	.....	.....	46	.....	.....	4	.....	1	.....	20
.....	.....	.....	.....	$20,808	.....	.....	$1,200	.....	$624	.....	21
43	37	281	220	12,289	273	47	255	17	405	71	22
33	19	222	155	7,908	267	36	255	14	219	48	23
38	23	243	179	9,907	69	43	255	15	319	54	24
$12,206	$4,497	$82,080	$67,002	$2,723,702	$22,080	$9,759	$43,900	$6,300	$78,473	$20,326	25
9	5	140	55	2,843	28	16	40	8	112	20	26
$4,148	$1,470	$55,329	$35,873	$1,299,595	$10,080	$4,800	$14,700	$4,000	$41,997	$10,370	27
27	16	89	121	7,001	41	27	188	7	199	33	28
$7,746	$2,922	$24,959	$30,129	$1,415,156	$11,950	$4,959	$26,700	$2,300	$35,500	$9,756	29
2	2	14	3	63	.....	.....	27	.....	8	1	30
$312	$105	$1,792	$1,000	$8,951	.....	.....	$2,500	.....	$976	$200	31
10	2	145	50	2,763	6	16	40	8	100	21	32
10	2	144	49	2,919	6	16	40	8	118	21	33
10	4	142	46	2,932	6	16	40	8	118	23	34
10	6	136	45	2,956	127	16	40	8	118	23	35
8	6	141	53	2,964	123	16	40	8	122	19	36
8	6	142	59	2,854	6	16	40	8	112	19	37
8	6	147	62	2,774	6	16	40	8	110	18	38
9	7	138	68	2,850	6	16	40	8	113	18	39
10	7	134	67	2,879	6	16	40	7	110	19	40
10	7	136	52	2,901	6	16	40	7	112	20	41
10	7	137	54	2,816	6	16	40	8	106	17	42
10	5	140	53	2,505	6	16	40	8	107	14	43
27	12	87	114	6,569	20	26	188	7	153	31	44
25	12	87	112	6,860	20	26	188	7	202	31	45
25	12	89	116	7,218	20	26	188	7	200	34	46
27	14	89	108	7,187	145	26	188	7	206	38	47
25	14	90	116	7,230	155	25	188	7	214	34	48
25	14	91	137	7,114	20	27	188	7	206	31	49
23	15	92	131	6,840	20	23	188	7	225	27	50
28	18	84	137	7,184	20	27	188	4	233	32	51
31	23	88	134	7,202	20	28	188	5	219	32	52
31	24	90	115	7,291	20	29	188	8	199	34	53
31	20	91	117	7,160	20	27	188	7	184	34	54
27	18	90	116	6,162	20	29	188	7	151	37	55
2	1	13	3	51	.....	.....	27	.....	6	2	56
2	1	12	3	48	.....	.....	27	.....	11	.....	57
2	2	16	3	58	.....	.....	27	.....	11	2	58
2	2	15	3	63	.....	.....	27	.....	11	2	59
2	2	12	3	65	.....	.....	27	.....	12	2	60
2	1	14	3	67	.....	.....	27	.....	9	2	61
2	1	12	3	67	.....	.....	27	.....	9	2	62
2	2	16	3	71	.....	.....	27	.....	9	2	63
2	2	15	3	71	.....	.....	27	.....	6	2	64
2	2	16	3	73	.....	.....	27	.....	5	2	65
2	2	14	3	61	.....	.....	27	.....	5	2	66
2	1	16	3	58	.....	.....	27	.....	5	2	67
$1,762	$2,130	$10,728	$1,971	$341,486	$2,332	$883	$11,600	$629	$9,474	$1,313	68
$1,160	$909	$50	$260	$47,115	$832	$223	.....	$480	$2,883	$2,152	69
$72	$72	$1,678	$256	$11,208	$30	$40	$1,120	$39	$549	$268	70
$530	$1,149	$9,000	$1,455	$197,343	$1,470	$620	$5,480	$110	$5,442	$893	71
.....	.....	.....	.....	$85,820	.....	.....	$5,000	.....	$600	$1,000	72
$27,980	$11,677	$171,302	$79,975	$6,328,036	$66,590	$20,737	$174,190	$9,785	$319,167	$42,471	73
4,918	464	10,505	6,696	566,932	8,144	1,961	8,116	540	18,392	2,488	74
$26,650	$8,052	$134,760	$69,932	$4,759,070	$53,120	$16,454	$146,517	$8,500	$289,397	$33,771	75
.....	273	5,473	.....	67,638	167	.....	1,475	174	3,102	672	76
.....	$4,837	$79,537	.....	$804,618	$2,500	.....	$16,040	$2,640	$49,824	$10,393	77
70	13	.....	42	97,228	83	.....	466	.....	2	16	78
$750	$116	.....	$600	$982,467	$1,000	.....	$6,352	.....	$36	$200	79

[1] Includes 1 establishment the schedule for which was received too late to be included in the general report as presented in Manufactures, Parts I and II.
[2] Includes establishments distributed as follows: Colorado, 1; Connecticut, 1; Maine, 1; Missouri, 2; Montana, 1; Nebraska, 1; Oklahoma, 1; Oregon, 2; Rhode Island, 1; Utah, 1; West Virginia, 1.

TABLE 13.—GLOVES AND MITTENS, LEATHER,

		United States.	California.	Illinois.	Indiana.	Iowa.	Maryland.	Massachusetts.
	Materials used—Continued.							
	Hides and skins—Continued.							
	Total cost—Continued.							
	Cabretta—Brazilian sheepskins—							
80	Dozen	6,432	677	1,000	.....	.....	.....	.....
81	Cost	$47,399	$5,300	$5,000	.....	.....	.....	.....
	Roans—All kinds of domestic sheepskins—							
82	Dozen	422,481	11,720	111,565	13,215	6,477	670	3,664
83	Cost	$2,256,511	$64,936	$500,766	$69,514	$32,700	$4,250	$15,250
	Horse and cow hides—							
84	Dozen	30,180	2,361	11,559	1,872	337	33	.....
85	Cost	$1,352,148	$108,234	$526,211	$87,749	$16,600	$1,680	.....
	Kid, imported—							
86	Dozen	70,824	913	1,285	.....	1,242	2,500	860
87	Cost	$740,170	$12,350	$12,536	.....	$11,300	$30,000	$10,595
	Kid, domestic—							
88	Dozen	97,245	2,481	706	.....	443	500	650
89	Cost	$708,800	$16,220	$6,500	.....	$2,980	$5,000	$5,000
	All other varieties—							
90	Dozen	4,286	712	1,577	.....	167	.....	.....
91	Cost	$32,961	$6,500	$12,500	.....	$4,000	.....	.....
92	Fuel	$42,230	$935	$6,527	$1,132	$1,800	$39	$400
93	Rent of power and heat	$19,919	$1,939	$650	$60	$248	.....	$955
94	Mill supplies	$12,619	$215	$810	$803	$465	$5	$110
95	All other materials	$1,904,778	$59,830	$186,010	$13,587	$33,386	$12,197	$17,775
96	Freight	$46,123	$1,457	$3,420	$350	$3,650	$227	$1,050
	Products:							
97	Aggregate value	$16,721,234	$920,624	$2,454,252	$264,271	$273,000	$86,675	$286,210
	Gloves and mittens—							
98	Total dozens of pairs	2,895,661	121,301	573,411	92,300	52,463	9,587	34,673
99	Total value	$16,039,168	$887,239	$2,324,698	$264,271	$238,400	$82,685	$286,210
	Men's—							
	Lined—							
100	Dozens of pairs	952,820	11,692	105,546	67,500	4,750	1,557	2,622
101	Value	$4,959,902	$91,100	$520,558	$210,250	$30,000	$13,980	$18,403
	Unlined—							
102	Dozens of pairs	1,814,507	87,277	366,937	12,300	36,620	6,700	8,470
103	Value	$7,458,356	$656,991	$1,490,071	$26,266	$142,600	$65,490	$59,075
	Women's—							
	Lined—							
104	Dozens of pairs	78,783	1,810	3,593	.....	1,450	.....	.....
105	Value	$538,362	$10,900	$15,065	.....	$6,300	.....	.....
	Unlined—							
106	Dozens of pairs	221,039	7,392	4,758	.....	6,230	820	23,581
107	Value	$1,772,745	$62,620	$33,050	.....	$47,500	$1,810	$208,792
	Gauntlets—							
108	Dozens of pairs	24,004	4,210	2,150	.....	360	.....	.....
109	Value	$150,652	$31,048	$13,050	.....	$2,200	.....	.....
	Boys' and youths'—							
	Lined—							
110	Dozens of pairs	148,493	2,020	40,515	12,000	2,035	310	.....
111	Value	$548,556	$7,380	$113,550	$26,755	$6,600	$850	.....
	Unlined—							
112	Dozens of pairs	98,972	5,435	47,057	500	1,018	200	.....
113	Value	$377,503	$21,390	$130,479	$1,000	$3,200	$555	.....
	Misses' and children's—							
	Lined—							
114	Dozens of pairs	39,873	.....	2,815	.....	.....	.....	.....
115	Value	$160,998	.....	$8,550	.....	.....	.....	.....
	Unlined—							
116	Dozens of pairs	17,170	1,465	40	.....	.....	.....	.....
117	Value	$72,093	$5,810	$325	.....	.....	.....	.....
118	All other products, including custom work and repairing	$682,066	$33,385	$129,554	.....	$34,600	$3,990	.....
	Comparison of products:							
119	Number of establishments reporting for both years	305	22	22	3	5	3	6
120	Value for census year	$13,831,038	$891,624	$2,428,518	$264,271	$267,000	$86,675	$231,010
121	Value for preceding business year	$11,426,896	$784,049	$1,877,120	$227,441	$226,000	$73,375	$180,600
	Power:							
122	Number of establishments reporting	192	14	15	3	5	1	6
123	Total horsepower	2,137	40	170	62	281	6	62
	Owned—							
	Engines—							
	Steam—							
124	Number	45	.....	4	.....	3	1	1
125	Horsepower	1,886	.....	93	.....	255	6	50
	Gas or gasoline—							
126	Number	34	4	7	2	2	.....	.....
127	Horsepower	388	17	44	52	18	.....	.....
	Water wheels—							
128	Number	2	.....	.....	.....	.....	.....	.....
129	Horsepower	30	.....	.....	.....	.....	.....	.....
	Electric motors—							
130	Number	4	.....	2	.....	1	.....	.....
131	Horsepower	23	.....	11	.....	10	.....	.....
	Other power—							
132	Number	1	.....	.....	.....	.....	.....	.....
133	Horsepower	1	.....	.....	.....	.....	.....	.....
	Rented—							
134	Electric horsepower	218	20	.....	.....	3	.....	.....
135	All other horsepower	141	3	22	10	.....	.....	12
136	Furnished to other establishments, horsepower	205	.....	.....	.....	4	.....	.....
	Establishments classified by number of persons employed, not including proprietors and firm members:							
137	Total number of establishments	381	23	24	3	6	3	8
138	No employees	17	.....	2	.....	.....	.....	1
139	Under 5	55	5	3	.....	.....	1	.....
140	5 to 20	120	6	3	1	3	1	2
141	21 to 50	96	6	7	.....	1	.....	4
142	51 to 100	48	5	2	1	1	1	1
143	101 to 250	35	1	5	1	1	.....	.....
144	251 to 500	5	.....	1	.....	.....	.....	.....
145	501 to 1,000	5	.....	1	.....	.....	.....	.....

BY STATES AND TERRITORIES: 1900—Continued.

Michigan.	Minnesota.	New Hampshire.	New Jersey.	New York.	Ohio.	Pennsylvania.	Virginia.	Washington.	Wisconsin.	All other states.	
.....	.....	.....	25	4,619	106	.....	.....	.....	.....	5	80
.....	.....	.....	$221	$35,828	$1,000	.....	.....	.....	.....	$50	81
4,400	115	4,220	400	242,428	7,508	1,778	2,133	273	10,665	1,250	82
$17,893	$620	$25,913	$2,000	$1,337,004	$44,000	$7,850	$67,125	$1,360	$58,633	$6,697	83
149	49	563	.....	9,007	74	183	630	93	2,962	308	84
$6,995	$2,329	$27,419	.....	$371,884	$8,600	$8,604	$30,092	$4,500	$141,495	$14,756	85
49	9	.....	5,729	55,421	.....	.....	1,300	.....	1,516	.....	86
$512	$110	.....	$64,111	$566,201	.....	.....	$14,200	.....	$18,165	.....	87
250	5	.....	500	89,166	100	.....	2,112	.....	145	187	88
$500	$40	.....	$3,000	$653,733	$700	.....	$12,708	.....	$1,244	$1,175	89
.....	.....	249	.....	1,425	106	.....	.....	.....	.....	50	90
.....	.....	$1,891	.....	$7,250	$520	.....	.....	.....	.....	$500	91
$75	$165	$1,439	$365	$21,405	$390	$203	$5,418	$25	$1,569	$343	92
$338	$40	$25	$180	$14,679	.....	.....	.....	$20	$720	$65	93
$15	$10	$240	$20	$7,455	$180	$79	$2,000	.....	$195	$17	94
$500	$3,140	$29,466	$9,454	$1,498,909	$12,400	$2,976	$20,225	$990	$45,901	$8,032	95
$402	$270	$5,372	$24	$26,518	$500	$1,025	$30	$200	$1,385	$243	96
$54,850	$24,328	$296,557	$171,065	$10,854,221	$111,050	$42,236	$265,925	$24,685	$507,495	$83,790	97
16,225	2,873	49,085	18,755	1,721,831	43,386	9,223	41,075	2,060	95,235	18,178	98
$54,725	$20,628	$281,186	$171,065	$10,507,789	$95,390	$38,500	$196,925	$18,400	$493,375	$77,682	99
550	2,088	10,800	1,004	643,440	18,770	4,910	15,200	150	58,790	3,451	100
$4,600	$12,490	$76,200	$9,564	$3,547,825	$89,190	$22,050	$91,200	$1,500	$253,287	$17,705	101
14,625	785	33,585	15,693	637,155	24,516	3,313	25,400	1,635	30,465	9,031	102
$49,675	$8,138	$180,436	$143,367	$4,184,043	$55,750	$13,575	$103,000	$15,300	$208,635	$55,944	103
50	.....	.....	508	70,139	.....	.....	25	.....	976	232	104
$450	.....	.....	$5,134	$492,044	.....	.....	$150	.....	$6,564	$1,755	105
.....	.....	500	1,550	174,896	.....	.....	150	100	979	83	106
.....	.....	$2,750	$13,000	$1,391,948	.....	.....	$1,150	$900	$8,896	$990	107
.....	.....	.....	.....	17,094	.....	.....	25	.....	10	155	108
.....	.....	.....	.....	$102,926	.....	.....	$350	.....	$60	$1,018	109
.....	.....	1,000	.....	86,419	100	900	100	.....	3,032	62	110
.....	.....	$6,000	.....	$371,575	$460	$2,475	$350	.....	$12,325	$246	111
.....	.....	3,200	.....	40,159	.....	100	100	150	978	75	112
.....	.....	$15,800	.....	$199,795	.....	$400	$400	$600	$3,584	$300	113
.....	.....	.....	.....	36,982	.....	.....	25	.....	5	46	114
.....	.....	.....	.....	$152,125	.....	.....	$125	.....	$24	$174	115
.....	.....	.....	.....	15,547	.....	.....	50	25	.....	43	116
.....	.....	.....	.....	$65,508	.....	.....	$200	$100	.....	$150	117
$125	$3,700	$15,371	.....	$346,432	$15,660	$3,736	$69,000	$6,285	$14,120	$6,108	118
5	5	6	4	190	3	3	.....	3	15	10	119
$54,850	$20,500	$296,557	$126,065	$8,520,142	$64,300	$40,936	.....	$24,685	$445,715	$68,190	120
$39,700	$16,050	$269,251	$92,452	$7,139,109	$59,500	$29,250	.....	$20,500	$384,435	$58,064	121
2	1	1	1	126	4	2	1	.....	8	2	122
3	1	405	6	922	38	10	20	.....	88	23	123
.....	.....	1	.....	29	1	1	1	.....	2	1	124
.....	.....	225	.....	612	10	5	20	.....	40	20	125
.....	.....	2	.....	9	3	.....	.....	.....	5	.....	126
.....	.....	180	.....	29	28	.....	.....	.....	25	.....	127
.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	128
.....	.....	.....	.....	25	.....	5	.....	.....	.....	.....	129
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	130
.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	131
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	132
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	133
3	.....	.....	6	163	.....	.....	.....	.....	23	.....	134
.....	1	.....	.....	90	.....	.....	.....	.....	.....	3	135
.....	.....	200	.....	.....	.....	1	.....	.....	.....	.....	136
5	8	6	5	243	5	4	3	3	19	13	137
.....	1	.....	.....	6	.....	.....	.....	.....	3	4	138
2	3	.....	1	29	1	1	.....	2	4	3	139
3	4	5	.....	78	1	2	1	1	4	5	140
.....	.....	.....	2	68	1	1	.....	.....	5	1	141
.....	.....	.....	2	31	1	.....	1	.....	2	.....	142
.....	.....	1	.....	28	1	.....	1	.....	1	.....	143
.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	144
.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	145